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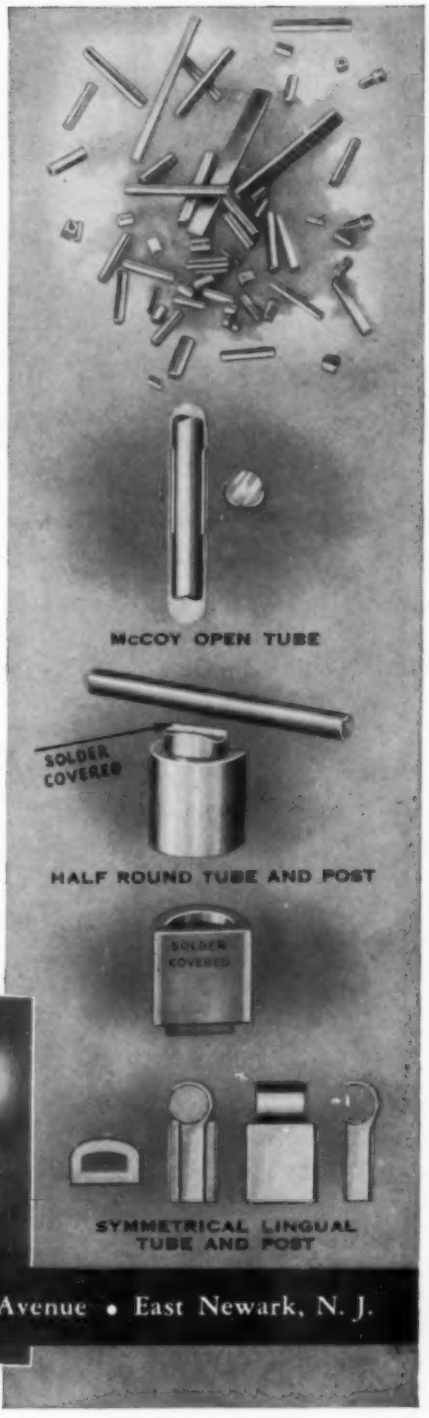

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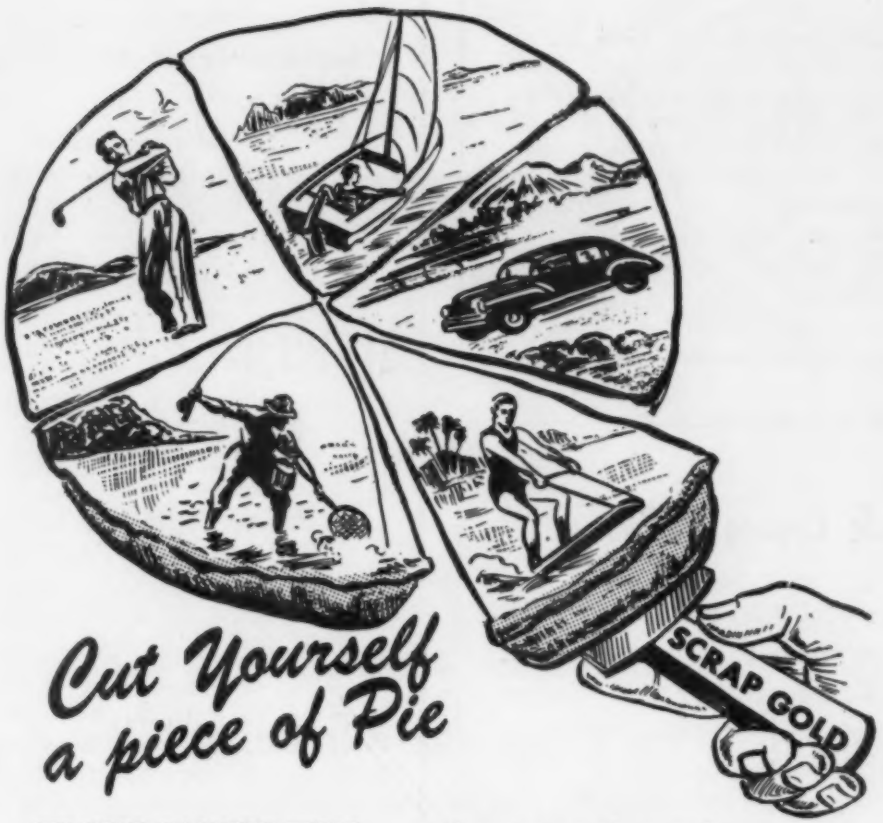

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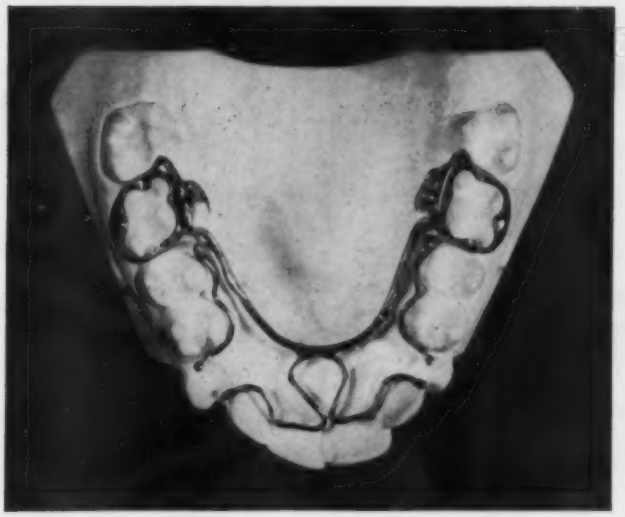

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VOL. 35 JUNE, 1949 No. 6

Original Articles

CLINICAL APPROACH TO ORTHODONTIC THERAPY

JOSEPH D. EBY, D.D.S., NEW YORK, N. Y.

INTRODUCTION: In looking back through the early days of our lives it is interesting to recall certain conditions and incidents, which, now present in the form of highlights in our memories, were destined to exercise strong influences over our forthcoming careers. As an underlying factor of life, and an experience common to us all, it is also interesting to analyze some of the events which in that formative period affected the lives of our friends and those whose attainments have been a source of real personal inspiration. Unless some agencies enter the scene to divert or interrupt plans, it can be assumed that the major factors which determine the patterns of our futures are established in youth. Like some old trail blazed through the forest they are interesting to retrace and look back over again.

In the spring of 1903 while still in my lower "teens" it became my good fortune to enter the office of Dr. Thomas P. Hinman of Atlanta, Georgia, with the expectation of embracing dentistry as a profession. As a youth, my impressionable mind recorded some of the circumstances surrounding those days which have remained vividly in my memory ever since. There was nothing "exciting" going on in dentistry in those days, nor anything partaking of the striking changes that came with such sweeping strides in later years. Dr. Hinman had the second x-ray machine taken south of the old Mason-Dixon line, that of Dr. C. Edmund Kells of New Orleans being the first. Tragedy stalked with both of them. The operation of that machine was treacherous. Unseen dangers lurked in the air. The old gas tubes were crude, the technic difficult, and results were frequently far from satisfactory and hard earned. Porcelain art was progressing through its early stages. I was much attracted to it, and next to orthodontics I seemed to like it most. Baking had to be done by the eye at high temperatures rather than by measured heat and timing as now. Full and partial dentures were constructed on plain-line articulators. Partial dentures were crude. The anchorages for fixed bridges were either gold-shell

Presented at the meeting of the Southwestern Society of Orthodontists, Fort Worth, Texas, March 13-16, 1949.

crowns or "pivot" teeth. Gold inlays were made by filling in with 22 karat solder between a 3-1000 pure gold matrix and a portion of 36 gauge pure gold cusp. Beta eucaine was the local anesthetic of the day; there was no high pressure anesthesia. Gas was administered with great risk. Teeth were devitalized with arsenic fiber and only extracted when they became intolerable. Peridental diseases were paid but superficial attention, and the possible association of dental and oral pathology with systemic disease received little or no consideration.

With the exception of oral surgery, in which he was later destined to become one of the South's leaders, Dr. Hinman's practice covered a large field, including what for that period was quite an extensive amount of orthodontic work. It was quite obvious that orthodontics had been recently making more rapid strides within itself than any other branch of dentistry. Dr. Hinman through his many contacts with leaders in the North and East was familiar with these happenings. He told me of the events which led up to the organization of the first class of the Angle School of Orthodontia in 1900, and the fact that by reason of its success the school was to be continued. The formation of the Society of Orthodontists with its first meeting in 1901, and the subsequent change of name to the American Society of Orthodontists in 1902 were just as fresh in those days as similar events which have occurred within your recent memories. It was about that time that orthodontics became my favorite of all branches of dentistry, although it was to be my role to have quite an exhaustive experience in most all the various branches before becoming "leveled off" in exclusive practice—something which I have never regretted.

While never having lost interest in any branch of dentistry, it is a fact that through these years that first choice has remained the same. My fascination included the belief that steady progress was due to take place through which the specialty was preordained to achieve the highest professional standards and an enormous service to humanity. There were then some eight or ten men in America whose names were connected prominently with things orthodontic, men who in one way or another had made contributions which were to have a definite influence on the progress of orthodontics. Among those who impressed me most were Drs. Edward H. Angle, Calvin S. Case, and Victor Hugo Jackson. Each of these men had propounded different types of appliances, which by their own originality, or some remote connection to earlier appliances, became associated with their names. These appliances had certain different characteristics associated with their originator's concepts of treatment.

Beginning at that period and continuing through 1911 the Angle School of Orthodontia produced what, to my mind, will remain one of the finest groups of orthodontists who have ever represented any one particular period. As though Fate had chosen them both individually and collectively, no group could have better sustained the hardships of pioneering during the first decade of the specialty than those resourceful men. It later became my privilege to know practically all of them, either through professional contacts or close friendly relations. It was their work through the early decades which set in motion the machinery of orthodontic progress. For this they should be venerated and indubitably credited, both as individuals and as a group.

Following decades brought an increasing number of men who through scientific studies and investigative research have more than ably carried forward the work started by these pioneers. They too must be hailed for their steady contributions, and their many achievements fully acknowledge. The group of scientific and research-minded men working today in orthodontic and correlated sciences gives full and safe assurance that orthodontic progress is in capable hands and its future well assured.

Appliances: During my years in Dr. Hinman's office, before, during, and after college, the prevalent appliances were first, for arch expansion, the use of the plain Angle jackscrews attached to vulcanite caps cemented across the upper arch. Later on expansion was accomplished in both arches with the Jackson appliance. These would frequently be changed for the "E" arch and "D" bands for alignment, which Dr. Angle had produced sometime prior to 1900. Occasionally certain designs of Dr. Case's appliances would be used, following the illustrations in his textbook and made from a collection of parts bought from him and manufactured in his own laboratory. There was also in existence at that time the Baker intermaxillary anchorage which had been presented in the early nineties. Angle's classification as it is today without a word changed was then in use. In spite of numerous other classifications it seems intended to survive indefinitely.

All the work was approached from a strictly mechanical point of view. Operators realized that they were dealing with living tissue, but aside from that all the problems which enter into growth and development and the control of the vital structures which determine treatment now were given no consideration. Dr. Angle, in seeming desire to effect several improvements over the "E" arch and ligatures, produced the pin and tube appliance in 1912. The technic was almost too exacting for general use and the appliance practically inhibited certain movements. Uprighting the perpendicular axes of teeth was its best effect, and the accomplishment of rotations most difficult. Following the pin and tube, four years later (1916) Dr. Angle introduced the ribbon arch. Again in 1926 he came out with his fourth and last appliance, the edgewise mechanism. It is noteworthy that several years intervened before a certain impetus brought about its present popularity. It is also interesting to note that with the total dependence of the "E" arch upon ligatures for attachment that Dr. Angle discarded their use entirely in the pin and tube and ribbon arch appliances, only to return to the use of ligatures in a different form in the edgwise mechanism. The use of ligatures is directly dependent upon the degree of rigidity or flexibility of the arch and the strength of the ligature to sustain the stresses superimposed between the arch and the moving tooth. It is my belief that much greater efficiency can be gained and much tedious manual effort can be saved both patient and operator and increased efficiency gained by the employment of sliding or telescoping sheaths which can better control such important tooth movements as uprighting the perpendicular axis and rotation.

In working with the Angle "E" arch with ligatures and the Jackson appliance with springs, it was easy to detect by comparison that they had

contrasting advantages and disadvantages. The "E" arch was 16 gauge or .050 made of rigid metal and conformed to one shape if not altered. Normal was supposed to be accomplished when all teeth were brought into contact with it. In its buccolabial position it could be moved forward or backward by tightening or loosening the traction nuts in the front ends of the buccal tubes on the molar bands. Set at the forward objective the teeth were engaged by means of soft brass-bronze ligatures of 24 or .020 gauge and the force applied was a *pull*. Bands were rarely used except for possible rotations, but not to stabilize the attachment to the teeth. When twisted against the rigid unyielding arch, tension would be reached at between three and four pounds of pressure and the breaking point of the ligature would take place at around seven or eight pounds. This was an excessive force and definitely more intermittent than tractable.

The Jackson appliance, occupying mostly the lingual surfaces, accomplished all of its movements with a *pushing* force. Although the spring factor would follow the teeth more closely, the forces were also excessive. More than half of the Jackson appliance's efficiency was good for expansion, which was made with a 12 gauge or .080 arch wire. Their contrasts were directly opposite, but fancy their comparison with any or all of the appliances of today! The Angle appliance possessed better stability of anchorage, but the stresses placed upon the teeth were excessive and poorly applied. When the insecure ligatures and other parts of the appliance were tightened a maximum force would be established, whereupon its action immediately began to diminish toward a minimum until tightened again. The intermittency and extent of this reverse order of stress so taxed physiological tolerance that the principal advantage of this fixed appliance became the matter of anchorage.

The Jackson appliance possessed many of the opposite qualities. The anchorage was insecure, although Dr. Jackson in later days improved that somewhat. It was rare that the appliance could be removed and replaced in the same exact position. This would cause uncontrollable stresses which could produce elongation, depression, or other objectionable displacements of teeth. The springs could be adjusted with a minimum and constant stress, thus following the moving tooth, at the same time remaining well within the bounds of tissue toleration.

In August 1916 at a meeting of the then National Dental Association in Louisville, Kentucky, Dr. Frank M. Casto and myself engaged in a symposium entitled, "Fixed Versus Removable Appliances." While this debate did not take on any form of argument, Dr. Casto depicted his belief as to the advantages and disadvantages of the fixed appliances of that period, largely as described. The advocates and operators of fixed appliances were then changing over to the ribbon arch, with which they had had but little and painful experience. It became my duty to criticize all removable appliances such as were then extant. There was nothing debatable about the fact that insecurity of anchorage, difficulty of accurate replacement, limitations in certain movements, many mechanical defects, as well as poor cooperation on the parts of patients were

among their most fatal disadvantages. At the same time the gentle stimulus of the spring against the mobile tooth was an advantage beyond any reasonable question of doubt. In concluding our debate I made a prediction to the effect that modern progress in orthodontic mechanisms could scarcely be expected to produce sweeping innovations but would have to take place through the elimination of the objectionable features of existing appliances, and a combination and improvement of their more suitable qualities. After thirty years I fail to find anything that is new in principle whereby that prediction has not been fulfilled. Today we can enjoy the most stable anchorage and counter-anchorage, and the definite control of fine springs and delicate stresses.

Looking back over the appliances which were in use in 1900 when orthodontics became a specialty, this evolution appears most interesting. Dr. Angle's three changes in appliances since the "E" arch contained some significant improvements and constituted his expression of what had been proven to be physical necessities. Through the masterful work of Dr. John V. Mershon during the period between 1914 and 1918 the "labio-lingual" technic and principles of treatment, improving both anchorage and stress, were successfully developed. It was through Dr. Mershon's enlightened vision of growth and development, to which appliances are only supplementary aids, that he conceived the practical adaptation of making appliances the secondary object in orthodontic work. In Dr. Mershon's case it was not the "prescription that wrote the doctor" for, verily, he was the "doctor who wrote the prescription" of ordinate treatment. He replaced empiricisms and dogmas with facts, and the beam of light he cast into a groping darkness revealed the things which were obliged to be seen before this state of thwarted progress could be released from its bonds.

There was also another great orthodontist who was working along closely kindred lines at that time who deserves a generous amount of credit for his lasting contributions—he was Dr. Lloyd S. Lowrie of Chicago. Among the vital contributions in this modern epoch of orthodontic progress and achievement is the philosophy and teachings of Dr. Charles H. Tweed. His work too will likewise remain immortal.

Through the genius of Dr. Joseph E. Johnson another design and activation of these same basic principles has been produced in his "twin-wire" mechanism. As orthodontics has enlarged from a small handful of men to more than one thousand specialists in the country today, the ingenuity coincident with increasing numbers has brought about changes or modifications in these outstanding methods. But in all of them the changes have been in design rather than in basic principle. To cite one instance in this respect—it is appropriate on this occasion to refer to the work and contributions of Dr. Lowrie J. Porter. His model former and precise vice for the drawing of Johnson twin-wire arches are but illustrations of his high mechanical skill and genius. He has shown his exceptional aptitude for things orthodontic in many other ways. His results accomplished with both lingual and buccal attachments furnish further evidence of his natural skill. Just now the things he is doing in lingual arch de-

sign are very outstanding, and I am convinced that future progress in lingual efficacy will follow his present patterns. There are many others who are going to take the great works of the older masters and "carry on."

It is of value then to scan the progress which has been made in orthodontic appliances during the first fifty years of the specialty. While most objections to all earlier appliances have been eliminated, their very best principles have survived. It would be worth while from the research as well as the clinical point of view if an unprejudiced analysis of existing appliances could be prepared in order to note their relative advantages and disadvantages. I am sure it can be generally agreed that whereas orthodontics started out as a mechanical branch of dentistry, it has moved far over into biological concepts in which the patient often has as much to do with the results as the appliances used, and in which the appliances should play a secondary role.

Having traced the principles and patterns brought out through a résumé of appliance evolution, what conclusions may be drawn as to the attributes of an efficient orthodontic appliance? In the first place it should activate all stresses well within the physiological range and tolerance of the teeth and surrounding tissues. To do this it must have security of anchorage or resistance against work, and in order to produce the least amount of harm or interference it should possess simplicity of design. Security of anchorage or resistance may mean the necessity of banding the two or four first molars, or other so-called "anchor" teeth. Simplicity of design involves the subsequent appliance which is attached to the anchorage, and these designs should be governed only by the requirements necessary in accomplishing the purposes and needs immediately at hand. If anchorage and resign make it necessary to band all the teeth to meet the needs of a case to best advantage, then is should be necessary . . . and in that instance the best design deemed effective to cope successfully with the problem at hand. If correct anchorage and counter-anchorage—or may it be better expressed as resistance and counter-resistance—indicate the banding of four or six or more anterior teeth in each arch in order to accomplish successfully the work indicated, then that would be the interpretation of efficient designing. If for improved hygiene, greater flexibility, and the expedition of time and effort plain arches attached to anchor bands would safely and surely accomplish the necessary purpose, then that too would constitute effective design.

An orthodontic mechanism should never be an expression of indifference or careless habit in its use, nor should it be a sacrifice of the best efforts in the accomplishment of a purpose. On the other hand, an efficient mechanism would avoid the encumbrance of complicated and heavy appliances beyond the actual need. There are different tooth movements such as rotations, tipping, bodily movements, and root movements for which different attachments have to be made, and certainly the one which has been proven to be most effective would be indicated. Correct design must recognize several factors, one being that if an appliance is rendered sufficiently flexible the forces of function often aid in producing the desired movements. We know that some appliances are definitely

inefficient and yet they accomplish things sometimes beyond their own apparent range. Since the determination of any individual normal is dependent upon a diagnosis of abnormal, and since the treatment consists in changing abnormal to normal, the answer is that by some device the teeth have to be placed in motion in order to achieve the desired change. I maintain that no one has the just right to put any kind of an appliance on any teeth except to supplement something which Nature is not doing right, or to provide a correct activation where natural elements are definitely diverted from their normal course. If it is the expected physiological tendency for the teeth to move toward normal, why not select the appliance which obviously by its advantages is most capable of accomplishing that aim with a minimum of effort and strain? An appliance can be under-anchored and under-efficient or it may be over-anchored and over-efficient. Certainly the ideal or at least the correct appliance must exist somewhere in between these two extremes.

It is my belief that all existing appliances in use today possess certain varied advantages and disadvantages. No doubt a composite study of all present appliances would lead us a step forward in our search for greater efficiency. Whereas any one appliance may be most adequate in the accomplishment of given movements, there is no *one* appliance which by personal choice or prejudice can be accepted or condemned in favor of others. I doubt that there will ever be any *one* universal appliance. If a universal appliance ever does come about you can rest assured that its *variable* rather than *invariable* factors will permit of different adjustments adequate for different purposes, rather than one adjustment suitable for all. There should be several appliances which would be ideal for the successful treatment of various conditions, and their ideal points should be developed and recognized. Certainly lingual appliances which have been so highly developed through the years and with their marvelous action in many conditions are not going to be arbitrarily discarded.

Aside from the physical qualities of anchorage and design, all appliances possessing ideal properties must of necessity eliminate certain mechanical and other objections. An appliance which is going to tax both the operator and the patient beyond a reasonable limit just to get it inserted would contain that as an objectionable factor. Any appliance which by virtue of its location and design would be damaging to both teeth and surrounding tissues would possess thereby a point of weakness. Any appliance which utilized a degree of stress beyond the limit of physiological tolerance of the tissues, thus producing soreness, strain, or permanent damage such as absorption of roots, alveolar or gum tissue cannot be an ideal appliance. If an appliance involving such dangers and risks could accomplish a given task in less time than one which would be working within the zone of safety, then that appliance loses another count against its ideal qualities.

While undoubtedly some combinations of present day appliances will further approach the ideal in the future, it is still my belief that the wide range of requirements in things orthodontic will forever preclude the possibility of just that *one* appliance only. If orthodontics is to be recognized as an applied not

an empirical therapy, it must recognize the human needs and administer to them accordingly. It seems to me that it would be just as difficult to have a standard plan of treatment as it would be to have a standard age for treatment. It would be necessary to consider them together. It has been advocated by many, frequently arguing to their own advantage, that it is better to excell with one appliance than it is to have a workable knowledge of several. I don't believe that the technical range in modern appliances should be sufficiently great to allow this to play a decisive part. It is my firm belief that the treatment should be approached as a prescribed measure and that the best operator in any field is the one who has the knowledge and skill *to do the least he can at the right time.*

It is my belief that the seriousness and importance of proper oral prophylaxis and mouth hygiene must be stressed more in the clinical therapy of the future. There is a difference in both opinion and practice among orthodontists in this vital matter, ranging from total neglect, casual indifference, to, too often, insufficient emphasis. It is imperative that this situation should be improved within ourselves, not any outside sources. There may even come the time when increasing knowledge of dental caries and susceptibility of different individuals and conditions wherein such facts alone may have a strong influence in actually altering the designs of appliances. If the presence of appliances increased the amount of lactobacilli and carbohydrate particles beyond a reasonable control, then something must be done about it.

Dr. Olin W. Owen of Charlotte, N. C., is recording data from a very thoroughly devised plan of accurate and effective methods. His procedure is to cover a five-year program over a wide range of carefully selected cases of patients. They are distributed over patients wearing the three principal types of appliances, linguo-labial, Angle edgewise, and Johnson twin-wire mechanism.

His preliminary report, covering the first sixteen months of the tests, is most illuminating. This report should be published soon and should make every orthodontist sit up and take notice! His reference readings alone collect a full library on this subject and his plan of procedure is precise. He explains the various quantitative tests to determine caries activity at any given time by the presence or absence in varying degrees of the saprophytic organism *Lactobacillus acidophilus* and carbohydrate debris. He describes one method known as Snyder's test to determine caries susceptibility, which can be performed in a dental office and shown to patients and parents.

It seems that when a measured quantity of saliva is added to a given quantity of solution the reaction is shown by producing a solution of different colors indicating the degree or extent to which the individual is exposed. His tables are based on "band months"—i.e. one tooth with one band for one month is *one* "band month." In these mouths bearing the various appliances he lists another table known as "D.M.F."—i.e. D—decayed teeth, M—missing teeth, F—properly filled teeth. When appliances were inserted there was no *D.* or decay as all fillings had been made.

This preliminary report included 12 cases varying in bands in groups of (1) four, (2) eight or ten, (3) twelve to twenty-four. The total number of band months ranged with seven cases under one year, four cases under two years, and one over two years. His tests show that:

1) "The presence of Orthodontic appliances in the mouth does increase lactobacillus count.

2) "The degree of increase is dependent upon the number of bands.

3) "There is a correlation between the total number of band months and the number of lactobacilli per c.c."

He suggests:

1) "A low carbohydrate diet for the first six weeks of appliances in order to start with a low count.

2) "The use of fluorides in communal water supply, or topically.

3) "The use of ammonia preparations, such as dibasic ammonium phosphate as a dentifrice twice or three times daily, preferably after meals."

It has been my own practice during the past year to treat all teeth to be banded with 2 per cent sodium fluoride just as the band is being cemented. It is wise to check records with the general dentist, but usually this meets with his approval. I also believe that in mouths of low resistance and careless hygiene it is a safe procedure to bathe the margins of bands, particularly cervically, every third or fourth visit.

Treatment: In recognition of the fact that this paper is proposed to be a clinical one, let us pause again to recognize and pay respect to that group of scientific thinkers and research men who have passed to their final rewards, but have left behind a lore of facts concerning the origin, development, and growth of the human face. Let us furthermore pay homage and express our loyalty and confidence to the ever-increasing group of orthodontists and co-related scientists who today are carrying that vital part of orthodontic progress so surely and efficiently forward. The names of fifteen or twenty of our foremost thinkers could be enumerated here . . . it is with gratitude that they are in our midst, that we are all familiar with their work having profited by it so greatly . . . so it is surely understood who are meant.

In a paper by Dr. Leuman M. Waugh, entitled, "What Are the Requirements of Orthodontic Diagnosis?" read before the American Association of Orthodontists in Toronto in May, 1932, he very clearly brought out some of the facts concerning growth which possess definite indications for or against treatment in different ages and conditions, certainly no two the same. He called attention to the fact that at birth the face constitutes about one-ninth of the head, whereas at full growth it may constitute between one-third to two-fifths of the aggregate dimensions. Dr. Waugh prepared an illustration which shows the chronological stages of growth occurring intermittently through childhood and adolescence. There are several accelerated periods: broadly speaking, during the first year, from four to seven years, eleven to thirteen years, and terminal

growth usually starting during the sixteenth year. As pointed out and concurred in by a large number of contemporary investigators, development takes place in decidedly different growth centers throughout the bones of the face as well as in different directions and different dimensions during these various periods. Whether development is taking place in height, width, or depth, at different ages, it is the aggregate increment of all growth which is ultimately concluded in the adult. If these increments of growth are altered or lost, particularly during and between these early age groups, then decrement occurs, which will be difficult or impossible to retrieve in later years. How much better, with no dangers at stake, to strive to intercept these casualties and crippling conditions in their incipient stages. This brings out a thought of the much neglected subject of preventive orthodontics. It seems to me quite obvious then that in the early stages there are conditions presented which if they may be corrected will not only prevent them from getting worse, but will project the further growth trends of future stages toward normal rather than to carry along accumulated complications as the price of neglect. It is through these facts gained by all sorts of experiences and observations over a long period of time that I have been brought to some definite conclusions.

Conclusions: When the thirteenth annual meeting of the Eastern Association of Graduates of the Angle School of Orthodontia was held May 8, 1939, in the American Museum of Natural History in the city of New York, the famous explorer, Dr. Roy Chapman Andrews, in his address of welcome made the following statement: "You just can't get away from teeth wherever you go if you are in this Museum doing any zoological work. I think it is very interesting that a profession which started out as an almost mechanical branch of dentistry, as I believe your profession did do, very soon drifted away from the mechanical side and began to realize that it was a biological thing as well. The biology of your patient has as much to do in correcting as perhaps anything that you can do mechanically. Anything biologic is naturally welcome to this Institution." The significance of this statement coming from Dr. Andrews throws such a strong sidelight on the fact that we are as much or more dependent on biophysical factors than mechanical ones. The implication is that if the structures surrounding teeth were not vital and responsive to growth and change then any and all mechanical interference would be of no avail. This suggests that all mechanical devices are both supplementary and secondary to the biological and physiological elements upon which they are dependent.

It would then appear that if in all the various appliances the physical and biological principles are understood there should be no mystery about their action. If it is true that all teeth have a tendency to move toward their normal positions, the ideal appliance should not prevent within itself the exercise of such natural reactions. I still believe the best orthodontics is to be able to do the least one can, but definitely at the proper time. An advantage in early treatment is to correct malocclusion of the teeth in order to create a more favorable environment for the supporting structures, thus permitting them to develop to the fullest limit of their inherent capabilities. In other words, early

treatment may be interpreted as possessing a two-fold value. First, to prevent severe conditions from getting worse, whereby they would pass beyond reasonable treatment later, thus requiring compromises and limited results. Second, to divert functional and growth trends toward normal thus requiring but minimal treatment later or none at all. If then by early treatment functional factors are so restored as to permit of normal bone growth at the correct time, subsequent complication could be avoided even including the later loss of permanent teeth. Anthropologists show us that phylogenetically the substructures of the face are shrinking but the teeth are not reducing in substance. If it is true that the nearest point of symmetry reached from asymmetry determines arch form as the individual normal, then the shape of that arch should be in conformity with the characteristics, racial and otherwise, of the substructures of the face. In this there may be many kinds and degrees of very definite disharmonies between bone structures and tooth material. Inevitably there are such extreme variations as to require radical treatment, but in the majority of instances not until the face has acquired full growth. The removal of teeth can always be done, but the damage caused by ill-advised or premature extraction can never be replaced. It is my opinion that extraction should never be resorted to as a *principle* of treatment but more as a *necessity* or *compromise* after a thorough consideration of more conventional methods. Is it true that all malocclusal conditions are associated with maxillo-facial deficiencies? Is it true that all normal dentitions are supported by adequate development in the maxillo-facial structures? "Two wrongs never made a right." In case of *doubt* it is always safe to defer radical action until later. The element of doubt can only be eliminated in the majority of cases after full growth has been attained.

In diagnosis I like to consider the following sequence in the study of a given case. First, the general condition as a whole, its nature and extent. Second, existing local conditions and their influence or relation to the general condition. Third, whether they are treatable simultaneously, or whether the local problems should be cleared up first for safer and better assurance of correcting the general condition later. I depend upon and am guided by chronological factors in recommending such treatment. Extreme distoclusions, mesioclusions, and crossbites which displace normal growth are correctable between the ages of three and a half to five years, before the second accelerated growth period between the ages of five to seven years occurs. These conditions are never treated before the age of tractability unless extreme, and as soon as the teeth have been brought into the zone of safety all appliances should be removed. Much invaluable work can be accomplished in the period from seven to nine years inclusive in the mixed dentition, with untold preventive as well as corrective benefits even though treatment may have to be "interrupted" and later finished in the early stages of the subsequent perment dentition. These cases should also be extreme or exercising a serious influence on subsequent growth, or limiting to the possibilities of treatment in the permanent dentition later. It is with rarest exception if ever that treatment in this age group should last longer than one year. It is obvious that in these two younger age brackets treatment is not indicated unless conditions are extreme or menacing, but does not

imply that it should arbitrarily be avoided. If a certain appliance doesn't suit, why not adopt one that does? One of my own preferable age groups in which to treat both general or local conditions is between the ages of eleven to thirteen, or as soon as the full complement of permanent teeth back to or including the second molars have erupted. It is during this particular accelerated growth period that the structures are most mobile and growth responds to necessary mechanical aids most readily. I further believe that there are many problems which should or can best be treated during the middle and upper teens, just before or during the last stages of terminal growth, and of course adult orthodontics is a separate problem within itself involving more the nature of the individual case.

[Slides accompanied the presentation of the article.]

This is the text of the message I have striven to bring you. As one who has been both a witness and participant in the remarkable progress of the specialty we have embraced during these approaching fifty years, these are the things which through experience and observation I have seemed to assimilate. It has really been part of the romance of my life—a beautiful vista to turn back and gaze through, and my enthusiasm continues to grow. I have not a single prejudice, rather the feeling that there is good in all things even though they are not perfect. To you who by your choice have become heir to this noble heritage, I pray of you to keep your minds and hearts open. Don't let your view become obscured, but let "the light" so shine that you can grasp the values of the changing things which that never-ending tomorrow will surely bring. If I do nothing more for you than convince you of the need of this my mission will to me have been worth while.

Now what of the future? Perhaps it will do no harm at this stage to "raise the curtain" enough to take a glimpse at what lies ahead. It is my firm belief that progress to date in fundamental sciences has constructed a solid foundation which will continue to expand in breadth and depth to meet requirements. Problems of diagnosis needs must be rendered more accurate. Rule of thumb, arbitrary, or empirical procedures, regardless of the earnesty of purpose or honesty of conviction, will be obliged to succumb to more accurate precision. If in the differential diagnosis of certain general conditions there are two or more methods to follow wherein one of them is correct, that one must be found. Cephalometry has already revealed remarkable facts so vital in growth studies and diagnosis. Its use has been principally in institutional research and among studious investigative practitioneers. It is my prediction and greatest hope that in the near future cephalometric equipment will be produced which can be installed in all orthodontic offices. Improvements in precise diagnosis will likewise lend aid in suggesting the changes in principles of therapy whereby the coalescence of appliances and methods will be certain to follow. What a glorious outlook this is! How encouraged we should all be, and eager to follow.

There is nothing in orthodontics today of which I can wholly disapprove. I feel the present situation is healthy and wholesome, but I do believe with more time and experience there will come a certain "leveling-off" which will

add increased knowledge and greater security. If I could be granted one wish for which to live another fifty years, it would be to see what the specialty of orthodontics would achieve during that time. I have every confidence it will be in safe, secure, and strong hands, who will be ever-increasing benefactors in their great service to humanity.

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DISCUSSION

Dr. Lowrie J. Porter.—Looking back over the past thirty years, I can think of having heard many papers which contained thoughts and passages that have been so profoundly contrary to my opinions that I am sure that any discussion of them by me would have been upsetting to the essayist and embarrassing to me, but today I have the privilege of discussing a paper which contains a great deal of sound thinking and advice by one whom we all admire and for whose judgment we have the deepest respect.

I was much interested in Dr. Eby's early history and the fact that from early boyhood he was primarily interested in orthodontics. His early association with Dr. Hinman reminded me of the fact that my father was a dentist, but like the shoemaker's children, my father did not urge me to study dentistry. Dentistry was the farthest from my thoughts for I wanted to be an engineer. After high school graduation I found it necessary to work for a while and I consequently was employed in an automobile concern in Toledo, Ohio, for the following three years. While in Toledo, and quite by accident, I met Dr. Burt Abell, one of our pioneers in orthodontics. It was through this accidental acquaintance that I first heard about orthodontics and I immediately became profoundly interested in this specialty, for to me it was the engineering branch of dentistry. Dr. Abell loaned orthodontic textbooks to me and so for two years before going to dental school I diligently studied the writings of Angle, Case, Jackson, and Dewey.

So, like Dr. Eby, from my first introduction into the orthodontic field, I fell in love with it and definitely decided eventually to specialize in that branch of dentistry.

I too have been most interested in looking back over the past years of orthodontic development. Thirty years is not long in history, but in this new field, great strides of progress have been shown in that time. I believe it is safe to say that the greatest amount of definite, beneficial orthodontic progress has actually been made in the past thirty or thirty-five years. I often think of and feel sorry for my first patients with their labial arches and ligatures. I remember rolling out twenty dollar gold pieces to a thickness suitable to make molar bands which were so soft that they would stretch under mastication and would loosen frequently. So the metallurgists got busy and developed better band material. I remember demonstrating

heat bending of orthodontic wires to make appliances when some of the supply house metallurgists said it would be impossible to do that with any metal. I remember my poor attempts at using ribbon arches and pin-and-tube appliances and then finally I took a course in orthodontics where none other than your essayist, Joe Eby, was the instructor in making removable Jackson appliances. It has been interesting to see appliances develop into the fine technic which we use today. It has been grand to look back over thirty years of orthodontic progress, but it has also been wonderful to look back over thirty years of such a long and close friendship with the man who was said to be such a fine technician that he could "make solder run up hill." He was the army colonel who came to me in New York and asked me if I thought he could succeed if he started his own practice in New York (to which there was, of course, only one answer). This was the man who had been my teacher, the man who has done so much for our profession, and who to you and to me and to our profession is one of the greatest friends that ever lived, Joe Eby!

How fine to know, as Joe has mentioned, that our leaders in research and scientific studies have carried us so faithfully through this long period of development and how satisfying it is to see that our thinking men of the present and also our younger men, the leaders of the future, are sound, sane thinkers who will be able to carry on the development of our specialty in a fine, capable, and reliable manner.

As our ancestral pioneers met and overcame great obstacles in their paths, so have our orthodontic pioneers met their problems in stalwart fashion.

It is because of troubles and heartaches and constant struggles for improvements that our specialty has developed to the extent it has today, although it is still far from being perfect. Many of us disagree on the correct time for treatment and the proper methods of treatment, and yet, as Dr. Eby has said, this disagreement is healthy. Variations of opinions will always be healthy as long as we do not become so set in our ways that we become blind to the things the other fellow is doing.

Dr. Eby mentions that there have been no basic changes in the past thirty years and that many years ago he predicted that the future would be a process of eliminating the objectionable features and improving the good qualities of our technic. That was a very true prediction from a technical standpoint, for appliances have been changed and improved and new thoughts incorporated until at present we are able to select appliances which will give any type of tooth movement desired. Perhaps our greatest problem is so to select or construct appliances which will not give tooth movements which are undesirable or which nature will not tolerate because they are not within the limits of physiological growth.

As I look back on my early years, it seems to me that most of our thoughts were technical and that we usually gauged our best orthodontists by their mechanical abilities. Even today, we grant that technical skill is an essential qualification, but back of that must be a fundamental knowledge of the individual growth problem; we must be able to combine with this the limitations of growth and the age limitation of growth in each individual child. This backlog of fundamental knowledge combined with a natural ability for technical skill should make a good orthodontist, but orthodontic mechanics without these fundamentals is a dangerous thing in our profession.

I am glad Dr. Eby mentioned Dr. John V. Mershon's having emphasized the importance of the recognition of growth. Dr. Mershon developed the removable lingual appliance with half-round tube attachments and the use of auxiliary springs and stressed the importance of gentle pressures in orthodontic treatment, but his greatest contribution was his constant teaching and preaching and pounding into the heads of the orthodontists the fact that we were dealing with living organisms; that we could not produce bone growth; that appliances could do harm; that we could move teeth to where we thought they belonged but that nature would have the last say in where they would be left after our treatment had been completed. I believe it was this teaching of Dr. Mershon that first placed my feet on solid ground in orthodontics. I needed that guidance for I had wanted to be an engineer; I loved mechanics and at first I thought of this specialty only through the eyes of a technician. But here was a man who pioneered in instilling into our minds those thoughts on growth which we now find are the most fundamental phases of orthodontic treatment. If we disregard growth,

where are we? If we treat too rapidly for normal growth, what pitiable conditions develop! If we try to develop a patient beyond the possibilities of growth for that individual, how unstable and disappointing our results are going to be! And so Dr. Eby rightfully says that orthodontics, which originally started in mechanics, has now moved far into the field of biologic concepts.

The surprising thing to me, in watching the development of our specialty, is to see that some of our well-known orthodontists who talk about development and the limitation of growth are still unable or unwilling to see the possibilities of inherited factors which may warrant a drastic treatment, with even the removal of teeth in some cases, if we are to stay within the growth limitation of an individual child.

Getting seriously into the biological field has proven to us that a child may inherit large teeth which cannot be supported by the bone structure which that child presents. We cannot build bone, that is a proven fact, so we must recognize our limitation and not attempt to do the impossible. Orthodontics has suffered greatly in the past because of case failures due to the fact that we have not been willing to digress from old teachings and to see the necessity of recognizing that we did not formerly fully comprehend what are now proven biologic limitations. Until we can be open-minded and willing to see new developments, we will never be able to develop our specialty into the truly beneficial health service that we would desire.

One of our greatest problems today is the determination of when to and when not to extract teeth. Not long ago an extraction was considered malpractice. Now it is advocated in a very high percentage of cases by some of our most reliable practitioners. We all know that it is not a short-cut.

Dr. Eby has called our attention to his belief that extreme variations in abnormalities or underdevelopment of surrounding structures may at times require radical treatment, but, as he says, this should not be a principle of treatment to be followed as routine, but rather should be resorted to only as a necessity or compromise. He also lays stress on a very sensible and important belief of his, which is upheld by many of our prominent orthodontists—that when and if a compromise treatment involving extractions seems advisable, it should generally not be done until the child has largely attained full facial growth. This, of course, is a debatable question, but I believe we are going to make fewer errors if we work on the conservative side of treatment in these cases. Extractions have been practiced for many years but also for many years extraction was considered unnecessary and completely unjustified. Then came a complete revolution of theories in the practice of tooth removal and though it seemed drastic at times, we can, in the long run, I believe, be very thankful for it. Even though extraction may run to an extreme at present, I am very sure that eventually this change in thought is going to be of great value to us in the practice of orthodontics. As time goes on we will be able to look back at this period and we will see, as the results of extraction have been recorded, that a middle of the road course of treatment will have been reached, which will be of great value to our patients. I am sure that those who are now following what we think are extremes in extraction will eventually settle down to a course which will be much more conservative and I am likewise sure that those who have been so opposed to extractions will, after they have seen the eventual results in many of these cases, realize that those who are completely opposed to extraction are just as wrong in their beliefs as those who are overenthusiastic for extractions.

Dr. Eby mentions that the choice of appliance therapy and successful diagnosis is purely dependent upon our ability to recognize the individual normal as compared to the abnormal. Two children presenting exactly the same size teeth may necessitate entirely different shapes in arch form due to variations in individual bony characteristics and musculature. One may require tooth removal, while the other may not. Dr. Angle believed that until a person understood normal he could not prescribe treatment for the abnormal.

It is my sincere belief that extracting teeth for children at ten or eleven years of age, before we know what that childs facial growth is going to be, is going to result in a boomerang of criticism to orthodontics. Very extreme cases may, of course, justify such a procedure, even in these young children, but when some men have adopted the theory of

"When in doubt, extract," it is bound to be a very dangerous procedure and is going to result in many unjustified case failures and complications. And so again, I wish to lay stress on Dr. Eby's suggestion that we delay drastic treatment until the face has, to a large extent, reached its maximum growth.

Dr. Eby has laid great stress on the importance of prophylaxis during orthodontic treatment. Appliances efficiently made and cemented should, if anything, prevent tooth decay, and the frequent visits to the orthodontist insure better dental supervision during a susceptible period. Lack of proper prophylaxis will, however, permit decalcification whether the child is under orthodontic care or not, but if it happens during orthodontic treatment, the patient is liable to blame the appliance and the orthodontist. We are, therefore, justified in insisting on the fullest cooperation in this respect, and at times it is well to refuse treatment to a child who is careless in regard to mouth hygiene.

Appliance therapy is an essential adjunct to orthodontic treatment. The younger men and even the older men in orthodontics are constantly puzzled about what type of appliance is most efficient. I have enjoyed Dr. Eby's discussion of appliance selection—choosing appliances which have good anchorage, simplicity of design, and capability of working within the physiological limits of tooth and tissue changes.

His discussion of simplicity of design is excellent, for in that discussion he recognizes that simplicity of design means the choice of the simplest appliance which will efficiently accomplish the work desired. That may mean a lingual appliance with no attachments or with simple auxiliary springs; it may mean the banding of only one or two teeth; it may mean a lower lingual appliance and an upper labial arch; or a lower lingual in combination with an upper twin arch with banded upper anterior teeth; or this simple appliance may even be a matter of banding all of the teeth and using an edgewise arch. It is nice to think of simplicity in this manner. Dr. Eby recognizes first the importance of efficiency, for simplicity without efficiency is foolish, but the greatest simplicity of design *with* efficiency in treatment is a wise procedure from the standpoint of both the operator and the patient.

I can readily see the argument of some, that it is better to be able to use one appliance well than to use many appliances poorly. They are thinking of the old theory of being a "jack of all trades and master of none." But that does not necessarily have to be true in our specialty. It has well been shown that an orthodontist can be efficient in the use of labio-lingual appliances and also proficient in the use of twin arches or edgewise technic, and so he should be able to combine the uses of these technics in selecting the simplest type of appliance, providing it is also the best appliance which can be used efficiently in any individual case.

Then Dr. Eby deals with a most important phase of orthodontics—the time for treatment.

Several years ago I had the privilege of entering, with two other orthodontists, into a forum given for the First District Dental Society of New York on the subject, "When should orthodontic treatment be undertaken?" There was quite a variation in opinions by the three of us. Dr. Fred Blumenthal of Boston and I were inclined toward early treatment of cases, while Dr. Fred Kemple of New York was opposed to *any* treatment during the deciduous dentition. Dr. Kemple had practiced orthodontics for about forty years. He was one of Dr. Angle's first students and was one of those who wrote the original constitution and bylaws of the original "Society of Orthodontists" which later became the American Society of Orthodontists and, finally, the American Association of Orthodontists. Dr. Kemple was one of our finest and most experienced orthodontists in New York. He had been through many years of treating cases in early childhood. After these many years, his conclusion was that *no case* should be treated when in the deciduous dentition. As I have followed down through the past thirty years, I too have treated many deciduous cases, only to find myself later on re-treating many of the same cases for the same conditions for which they were originally treated. Now I find myself following somewhat the same procedure that Dr. Kemple advocated. I believe Dr. Kemple, however, was too conservative in the time for treatment of these cases. Occasional local abnormalities may necessitate early treatment but generally I believe that we should let the facial deformity of the child determine the time when we

should start treatment. As Dr. Eby states, it is better to intercept crippling conditions in their incipient stages than to let them carry along accumulated complications to the eventual detriment of normal growth.

As a general rule, I prefer to have a child wear appliances for the shortest possible time. We all know that no case can be completed until the permanent teeth (with the exception of the third molars) have erupted. That means that a child will be twelve or fifteen years of age before the completion of any case. If we start treatment for children at five or six years of age, they will need to be under our care for active treatment and rest periods for seven or eight years. In many of these cases we need their full cooperation, particularly when we are finishing their treatment, and if they have already been under treatment for five or six years they frequently are tired of treatment and will be uncooperative at the very time when we most need it. It has, therefore, been my belief for many years, that tretament in all cases should be postponed until the time when we can give them the most treatment and improvement in the shortest possible time within the limits of physiologic growth.

Facial deformity is, therefore, my guide, as a general rule. I believe some cross-bites require treatment in the deciduous dentition, while others can, in my opinion, wait for the eruption of the permanent teeth.

Class III cases should be treated early, even while still in the complete deciduous dentition, for in these cases we must try to establish a normal functional relationship to give that child the opportunity of normal facial development.

Some Class II cases should be treated early for the same reason, but I believe many severe Class II cases do not present complications in facial development and for that reason may well have treatment postponed to such a time that we can bring the arches into their normal relative positions just before the premolars and canines are erupting and in many cases we can wait for the complete eruption of the permanent teeth. Such cases will have good facial and dental results with the minimum amount of treatment and also for the minimum cost to the patient.

The time for treatment of Class I cases varies considerably. I personally believe that lateral development of the deciduous arches does not, as a rule, affect the erupting positions of the permanent teeth and I consequently feel that such treatment is often a waste of time and money. In Class I mixed dentition cases, we frequently see lower lateral incisors crowded lingually. In many cases this is not because of a lack of lateral growth, but rather is due to a premature forward shifting of the lower first permanent molars. If the first molars are in a normal mesio-distal relation in place of being end to end as they would ordinarily be, when the deciduous molars and canines are present, we can be quite sure of a crowded condition of the lower anterior teeth. Lateral development is not the answer.

Dr. Hays Nance has suggested the advisability of extracting deciduous canines to gain room for the crowded lower teeth. Since the developing permanent premolars and canines will take less room than the deciduous molars and canines, this extraction would be justified, but lateral development is definitely not the remedy.

In many of these cases we can delay treatment until the natural exfoliation of the deciduous teeth, at which time there will be plenty of room for all of the permanent teeth and we thus have shortened treatment and given the same eventual result.

I believe far too many cases are being treated in the deciduous dentition, and this long treatment is a severe and just criticism of orthodontics by the public.

The conservative orthodontist will, therefore, treat cases early only if facial or dental harm is going to result from a lack of treatment.

Deep overbites, in my opinion, should generally wait for the eruption of the permanent teeth. The overbite in Class I cases is, I believe, largely the result of an equalization of muscle pressure, as opposed to bone structure and thus, the normal overbite for different persons probably varies to a great extent.

Dr. Eby has covered this very nicely when he says, ". . . the best doctor is the one who does the least he can *at the right time.*"

It is quite unique when Dr. Eby says, ". . . getting a standard plan for treatment is just as difficult as getting a standard age for treatment." We know either one would be utterly foolish and yet some of our leading practitioners are setting definite standards for treatment. Some are working on a method of arch predetermination in which the shapes of all arches are the same and only vary in size as the amount of tooth structure varies. Some are laying great stress on the amount of bone structure as it relates to tooth structure and are resorting to tooth extraction, when bone structure is lacking. I believe that is justified in many cases, but when orthodontists plan to make all arch shapes the same regardless of the shape of the normal individual arch development, then that orthodontist is not consistent in recognizing the limitations of changes in bone structure by orthodontic means.

Dr. Eby's summary can well be taken to heart when he says:

1. Although they may not be perfect, there is some good in all new developments.
2. We must keep our hearts and minds open to new orthodontic procedures and be willing to change our concepts if new and better methods develop.
3. There is nothing in orthodontics which should be fully and finally approved or disapproved but the future of orthodontics is bound to be guided by more accurate diagnosis through greater research in which cephalometry may play an important part.
4. The present variation of opinions in orthodontics is healthy and wholesome for there will *eventually* be a settling of the pendulum as the final results of treatment are analyzed by conservative and open-minded practitioners.
5. And last, Dr. Eby makes a most hopeful and justified conclusion when he states that he feels the future of our specialty is in safe, secure, and strong hands. This statement is very satisfying to me because Dr. Eby has for several years been a member of the American Board of Orthodontics and he, therefore, has been reviewing many theses of the men who are applying for certification by the board. The theses and case reports presented by these men are outstanding in material and thought and good common sense, and if these are any indication of the type of men who are going to guide and direct the future of our specialty, then we must all agree with Dr. Eby in his feeling of stability and security.

Dr. Eby has several times in the past accurately predicted the future of orthodontics. His predictions have always been founded on a sound basis and so once again, I am sure you will all agree that we can fully depend on the thoughts and judgments and predictions of this true disciple of our specialty.

I deeply appreciate the opportunity of discussing this splendid paper and now, in behalf of myself and each one of you, let me say from the bottom of our hearts, "Thank you Joe."

"AN EDITOR VIEWS THE NEWS"

H. C. Pollock, D.D.S., St. Louis, Mo.

WHEN your program committee asked me to speak at your meeting, I was careful to point out that most of my extracurricular time for a number of years has been spent in editing and assembling material for publication in the Journal. I added further that among the many things learned in that capacity one thing stands out—that there is far better talent available in the orthodontic profession to create manuscript for scientific organizations than your editor is endowed with.

The answer was, "Perhaps that is true, notwithstanding you must have gained some views during these years as editor of the American Journal of Orthodontics that will be interesting to our members."

In accord with the suggestion of your committee then it may be well to assume the premise reflected in the name of a popular radio program, "An Editor Views the News." Therefore I will try to tell you something about the conception, birth, and growth of your American Journal of Orthodontics.

There seems to be no record that the entire story of the creation of this Journal has been formally told, so now after about thirty-four years I hope it will be of some interest to you.

Many years ago a young graduate of medicine in the city of St. Louis, Missouri, seemed to enjoy selling medical and dental textbooks to physicians and dentists more than he did the practice of medicine. The reasons he kept on selling medical and dental textbooks subsequent to graduation were several: first, he made it plain that he found medical practice uninteresting, and that selling textbooks packed more action; second, he did not believe that he was temperamentally fitted for the practice of medicine; third, and last, he said that the textbook department of scientific medicine contacts one with the medically great, and there is a fascination in having a "ringside view" of the step-by-step advancement of scientific medicine.

That man was the late Dr. C. V. Mosby who became the founder and president of one of the largest firms publishing scientific books and journals in the world.

According to the story handed down to your editor, during the early years he beat a well-marked path to the doors of medical and dental men in the city of St. Louis in order to sell textbooks. One of the men he called on from time to time was the author of a textbook about a new subject called orthodontia; this man had become an international figure in this subject. His name was Dr. Edward H. Angle.

Presented at the meeting of the Southwestern Society of Orthodontists, Fort Worth, Texas, March 13-16, 1949.

The young salesman asked Dr. Angle many questions about his work, and, not unlike the inspiration Dr. Angle was responsible for in his many students, he aroused the interest of the young doctor and book salesman.

The years passed and the paths of these two men separated. In time the book salesman founded the INTERNATIONAL JOURNAL OF ORTHODONTIA which now under a new name comes to your desk each month. It has been published each month for thirty-four years.

In retrospect, this is how it happened. On June 24, 1914, the late Dr. Charles H. Mayo read a paper before the section on stomatology of the American Medical Association at Atlantic City. In this paper this eminent authority on scientific medicine made some interesting observations about dentistry. It attracted no small amount of attention even in the lay press.

Dr. Mayo made the statement that in the future more than in the past, society would demand orthodontic services. Human efficiency to a great extent depends upon a well-regulated digestive system, and such is dependent on sound teeth and as nearly perfect occlusion as is possible to obtain. Society is going to wield the "Big Stick," as Dr. Mayo put it, to such an extent that orthodontic service will become the necessity of the future.

He believed that the day was not far distant when orthodontics would become one of the most important specialties of either medicine or dentistry. He predicted great advancement in the work, as a result of which child life would be benefited.

The publisher, Dr. Mosby, and Dr. Mayo had been good friends of long standing. Dr. Mosby called upon Dr. Mayo in Rochester and asked him to elaborate further on his observation about orthodontics. After this inspiration by Dr. Mayo, the JOURNAL was born at a lunch table in the old Beers Hotel in St. Louis, Missouri, in the presence of the publisher and your editor, at the time of World War I.

The question promptly arose as to who should be asked to edit the new JOURNAL. It was decided that inasmuch as Dr. Edward Angle was then the leading figure in the specialty in the entire world, he should be asked to edit the JOURNAL. A letter was promptly dispatched to Dr. Angle setting forth the plan. However, he manifested no interest, and it was presumed that he felt the field was too limited to support a journal. Dr. Martin Dewey then of Kansas City, Missouri, a widely experienced teacher, former teacher in the Angle School of Orthodontia, and protégé of Dr. Angle, was asked to become editor-in-chief of the JOURNAL.

In an editorial in the first issue of the INTERNATIONAL JOURNAL OF ORTHODONTIA (January, 1915) it was written that the JOURNAL would endeavor to serve society by arousing interest in this much-needed, fascinating branch of science. It stated that its pages would be offered to the workers in the field with the hope that it might benefit humanity, that it might help to increase human efficiency, and that it might become a factor in arousing interest in child life to such an extent that malocclusion would be given as much attention as was then bestowed by school examiners upon adenoids, eye strain, and mental defects.

The editor, Martin Dewey, wrote that it was hoped through this policy to serve at all times the greatest number to help make orthodontics the science that

all hoped it would ultimately become, and that the JOURNAL would be open to all authors of merit, without prejudice and regardless of sect, color, or previous condition of servitude.

In that first issue of the JOURNAL in 1915 were articles by Albert H. Ketcham of Denver, Colorado, Daniel M'Kenzie of London, England, Burton Lee Thorpe of St. Louis, Missouri, W. G. Barr of Wichita, Kansas, Grafton Munroe of Springfield, Illinois, T. G. Duckworth of San Antonio, Texas, and J. W. Rawlings of Tacoma, Washington.

The first years of the JOURNAL were difficult; satisfactory manuscript available for publication was hard to find. Much of the manuscript available at that time consisted largely of orthodontic mechanics; however, there were a few authors who had far-reaching visions of scientific orthodontics, and they carried the bulk of the load of orthodontic manuscript for the first few years.

It is of interest here to note that the late Milo Hellman of New York was the most prolific author of scientific manuscript published in the AMERICAN JOURNAL OF ORTHODONTICS for all time. He loved his work, he loved to investigate, and he spent thousands and thousands of hours writing and investigating various phases of orthodontics.

There were occasions when manuscript was so difficult to obtain that Dr. Dewey wrote articles so that the JOURNAL could go to press and meet its deadline.

After three years the JOURNAL became the official organ of the American Society of Orthodontists, and subsequent to this time there was little difficulty in obtaining sufficient material in order to go to press each month and keep up the systematic publication of the JOURNAL.

The JOURNAL has published thirty-four volumes of manuscript and has never missed a month of going to press in thirty-four years. This record includes the period of two wars, during which time many dislocations made publication difficult. The JOURNAL has established a record of having assembled and published the richest and most profuse scientific record of any single department of dentistry. The JOURNAL has been fortunate in enjoying the cooperation of orthodontists throughout the world, also the almost religious cooperation of a group of associate editors, representing the various component societies of the American Association of Orthodontists.

This group of associate editors for the most part worked hard and long for the advancement of the JOURNAL. When a stupid and amateurish propaganda attack was launched on the JOURNAL by an honorary society for no good reason in order to disorganize its policy, several of these associate editors came to its defense.

The attack, based upon the ownership of the JOURNAL, came from without the orthodontic group. They soon withdrew, however, when they found there was tradition and loyalty behind the record of the JOURNAL.

If the late Dr. Mosby were living today, I believe he would feel that he did a constructive piece of work for orthodontics thirty-five years ago when he launched and published the INTERNATIONAL JOURNAL OF ORTHODONTIA. I believe that the late Dr. Martin Dewey, having spent years as editor of the JOURNAL, would feel proud of efforts accomplished over a period of many years.

It is not well known that the INTERNATIONAL JOURNAL OF ORTHODONTIA was the pioneer and inspiration journal of a series of journals devoted to the various specialties of medicine and dentistry. At this time The C. V. Mosby Company publishes eleven journals devoted exclusively to various specialties of medicine and dentistry. These are *Surgery, American Heart Journal, The Journal of Laboratory and Clinical Medicine, American Journal of Obstetrics and Gynecology, The Journal of Pediatrics, Oral Surgery, Oral Medicine, and Oral Pathology, The Journal of Thoracic Surgery, The Journal of Allergy, Journal of Dental Research, American Journal of Syphilis, Gonorrhea, and Venereal Diseases,* and AMERICAN JOURNAL OF ORTHODONTICS. The INTERNATIONAL JOURNAL OF ORTHODONTIA was the forerunner of all of these, and the only specialty journal devoted to any phase of dentistry.

There are other interesting things that I have been asked to review as an editor. The new specialty of orthodontics picked up momentum about fifty years ago, and now its workers in America alone number close to one thousand persons who devote their entire time to this specialty. Not unlike the specialty of pediatrics in medicine, it is thought to be an important health service of considerable merit.

Something new and different is now happening on a nationwide level. It is called "The Welfare State," or the insurance state. The implication is that many of the risks of daily family living are to be shifted from the individual to the government of all of the people. An important part of this plan is health service, and the premise seems to be based on the proposition that health is not only the responsibility of the individual but that it is also the responsibility of society at large, of special groups, such as medical societies, consumer organizations, and even labor unions.

Among the many health benefits to be anticipated, children's dentistry is found high on the priority list; signs now indicate that one of the component parts of children's service will be orthodontics in some form or other.

I would like to paraphrase the late Al Smith, "Let's take a look at the record." During the many years of my association with the AMERICAN JOURNAL OF ORTHODONTICS, I have read the views of fellow workers and am intrigued by the viewpoints of others who look from the outside in; therefore, I would like to look in from the outside.

Dr. Harry Sorrels of Oklahoma City, Oklahoma, made a poll several years ago in order to ascertain the opinion of the public concerning the specialty of orthodontics. The result of this poll was published in the JOURNAL; therefore it is unnecessary at this time to review this incident other than to say that the poll conducted by Dr. Sorrels proved to be amazingly favorable toward the merits of the specialty of orthodontics.

It may be interesting also to review what officials and state health organizations are thinking pertaining to the subject at this time because they are looking into the merits of all health services, and all published material is carefully scanned by experts.

In its new survey book just off the press entitled "*Your Child From 6 to 12,*" the Children's Bureau of the Federal Security Agency, among other things, has this to say about orthodontics:

> If either the lower or upper jaw tends to stick out because the lower teeth overlap the upper in front or the upper teeth protrude too far beyond the lower, the child should be examined frequently by a dentist specializing in this field, known as orthodontia. Sometimes the condition will correct itself as the child grows; in either case it may be necessary to have special treatment in order that a child's appearance may be improved. Before the jaw has become completely calcified this is a fairly easy procedure; later on, little or nothing can be done. But when a child between 6 and 12 has a chin that recedes noticeably or lips that cannot be closed because of protruding teeth, no pains should be spared to make him feel happier about his appearance even though this may mean rather long-drawn-out orthodontia.

Let us look at another independent viewpoint as to what others are saying on the subject. It has long been the custom of orthodontic societies to call in outstanding men from collateral branches of science and to solicit their help and aid them in analyzing their problems. That very thing was done again in 1946 when Dr. Earnest Hooton, the noted anthropologist of Harvard University, was called to Colorado Springs to appear before the American Association of Orthodontists and reveal what he thought about the specialty. Leading off with the terse observation that "realization of ignorance is the beginning of wisdom," he had some interesting things to say to orthodontists. He made it plain, however, that his observations were purely a matter of opinion; a great many orthodontic contributions have been based upon a matter of opinion.

In trying to reflect the anthropological viewpoint, he pointed out that man now is in grave danger from some of the gadgets that he has created. He observed that man for the most part has tried to substitute the use of machines and gadgets for the proper exercizing and performance of work by his own body. He said that man uses powerful machinery for the grinding of his food, chemistry produces soft foods that need no grinding by the teeth, and then man wonders why his face and jaws get smaller as the generations go by.

Other impressions from Hooton are: "It sems that the orthodontist must decide as soon as possible whether in attempting to correct malocclusion if he is combating a natural evolutionary trend or whether he is attempting to remedy a pathologic condition that is the result of disease or atrophy of function, arising from too much dependence upon soft cooked foods, subnormal bone development due to nutritional defects, or to all of these factors in combination."

While paying respects to the mechanical dexterity of orthodontists, Hooton left little doubt that in his opinion there is a limit to the possibilities of orthodontic treatment and that there is a wide etiological field practically unexplored, about which orthodontists or anyone else know very little.

The nutrition problem has been written about extensively in relation to malocclusion; however, material too can be usually regarded as "matter of opinion" manuscript from an editor's viewpoint at least.

If you have read Weston A. Price's book, *Nutrition and Physical Degeneration,* which was written in order to record his clinical observations made on primitive people in various parts of the world, you noted that he believes it is

very important to modern civilization to find out the reason for the obvious narrowing of the face and dental arches that afflicts a considerable proportion of modernized people, contrasted with the arches and facial forms of primitive peoples.

In reading Price's book you probably soon sensed that, as a result of his wide clinical experience among primitive people, he believes much of this situation is due to prenatal as well as to postnatal nutritional conditions. In a word, in his opinion food balance of the pregnant mother is very important; he believes there is a tie-in between poorly developed, small pelvic bones and the same condition as manifest in the jaws and teeth. At least his opinion is interesting in connection with his experiences.

Everybody remembers Dr. Leuman M. Waugh's work that he reported about the Eskimos. Everything reported focused nutrition as an important tie-in with the condition of the teeth and jaw development.

Incidentally, Dr. Hooton paid tribute to the work of Broadbent, Hellman, Margolis, Baker, Brodie, Howard, and others (all orthodontists), and he stated that they have contributed more to scientific knowledge of the growth of the face and teeth and their interrelationship than have anthropologists and all other growth workers combined. That is important because it reveals that other collateral science is not unaware of what is being done by orthodontists in the matter of research as well as clinical experience.

Since the war, one-week or two-week postgraduate courses in orthodontics sponsored by the dental departments of large universities have become quite popular, and most of these postgraduate courses are confined and directed to students who are specialists. Most of such students have been in the armed services and are seeking advanced training in orthodontics; they find "quickie" courses advantageous. The postgraduate courses are usually connected with some key man who has a particular technique, viewpoint, or appliance. The courses are sponsored by universities but are in reality intensive indoctrination courses by a name man and assistants. The routine of students following an inspirational teacher of this kind is not new in orthodontics inasmuch as this has been going on for a great many years, in fact, ever since Dr. Angle started it in the city of St. Louis, Missouri, about the beginning of the century. This indoctrination teaching has been useful in orthodontics no doubt because mechanical technique takes such an important place in the over-all picture.

There can be little doubt that these courses improve the specialist's ability, or they would not be in such demand. There is, however, one objection to them. The indoctrination theories of practice in some instances are so remote from each other in basic concept that the student who exposes himself to too many of them becomes confused by contradiction based upon personal opinion.

During April of this year, the National Income Division of the United States Department of Commerce mailed questionnaires to more than 25,000 dentists in every state in the union, asking for their voluntary cooperation in a survey designed to provide basic information about the practice of dentistry, the gross incomes of dentists, office costs, expenses, net incomes, and salaries.

These questionnaires were sent to one out of every three dentists in the United States who were selected at random from each state, in order to yield a

representative cross section of the profession throughout the country. Since the Department is interested only in obtaining over-all summary figures such as totals, averages, and per cents, the forms are completely anonymous, requiring no signature and not being identified in any way.

This survey of the dental profession, covering the years 1943 to 1948, is being conducted with the wholehearted cooperation of the American Dental Association, the full endorsement and approval of its Board of Trustees having been received. A similar survey conducted in 1942 under the joint auspices of the American Dental Association and the Department of Commerce yielded a mine of valuable information, most of which was made available to members of the profession in detailed articles published in the November, 1943, issue of *The Journal of the American Dental Association* and in the April, 1944, issue of the *Survey of Current Business,* a publication of the Department of Commerce

This is important at this time because it is expected to reveal the importance and demand for various departments of dental service specialization, versus general practice.

The foregoing inferentially at least could be interpreted to mean that a new epoch is surely and certainly on the way in orthodontic progress and that the work is now at the crossroads. Orthodontics can continue on a precision, painstaking basis of treatment as developed by those who were pioneers in the specialty, or it may revert to the mechanics basis of the 1880's. Much of this trend in the future will depend upon whether the specialists can agree among themselves on, as suggested by Dr. Hooton, "just what they are attempting to do."

The question now seems to be whether or not those who anticipate a plan for orthodontics should tie in with a public health program. The answer will no doubt also have an important bearing on the direction orthodontic progress will take in the future.

If the perspective of the pioneers of the last fifty years of orthodontics is sustained and sound, then in the new social order of health service orthodontic services will not return to the pre-Angle tooth migration orthodontic treatment. If that happens, much of the effort made in the development of orthodontics will have been in vain.

What about the next epoch? Does Dr. Mayo's prediction that great things are ahead for orthodontics still prevail as it did in 1915? Your editor believes the same prediction holds true. Only one thing is different. Orthodontists must consolidate their position and tolerate no compromise of the orthodontic specialty in the new health service now plainly on the way.

In closing, I want to pay my respects particularly to the associate editors of the AMERICAN JOURNAL OF ORTHODONTICS who have worked long and hard for the success of your JOURNAL.

The Atlantic and Pacific have been worked the hardest. Without pay or hope of reward they have given a type of cooperation without which the JOURNAL could not endure.

I wish to say thanks to the associate editors for a job loyally and beautifully done for the AMERICAN JOURNAL OF ORTHODONTICS.

A PROFESSIONAL MAN'S APPROACH TO PUBLIC RELATIONS

JAMES T. WALLS, D.M.D., PORTLAND, ORE.

WHEN I started to prepare this paper, I wondered what in heaven's name public relations could mean to me, a professional man. Public relations has something to do with business. I am not a businessman. I am a professional man, and in my mind's eye, I saw myself as a nebulous character, bound by a code of ethics, wearing a cloak of old priestly mysticism, ruling in an ivory tower—my office. This was my little dream world of professionalism. And so it remained until by chance I looked up the word profession in the dictionary and found it defined as an occupation that involves a liberal education and mental, rather than manual, labor for gain, or *a business*. From this definition, I concluded I might be classified in a sense as a businessman, and that certain proved business techniques might be applicable to my profession without my foregoing my professed code of ethics or jeopardizing my standing in the community. Moreover, I have found that the application of a sound personal public relations program, conscientiously and intelligently applied, does much to eliminate the friction and frustration in my practice and to clarify misunderstanding with the public with whom I am concerned.

The complexities of modern civilization, while providing an advanced state of material well-being, have created a basic social and economic unrest, primarily due to misunderstanding of the other fellow's motives, his ideals, and aspirations. Herbert M. Baus states in his recent book *Public Relations at Work:* "Because of misunderstanding, society tends to operate as a series of sealed cylinders without proper means of understanding between them."

Orthodontists may be considered as one of the sealed cylinders of the great profession of dentistry. We possess *our* own organization. We are striving for achievement in *our* art and working as a group for mutual protection of *our* interests. While all this has brought us closer together, it has also obstructed other men's minds as to our purposes and intent toward the other cylinders of society. This mental obstruction pertains not only to the field of dentistry, but also to all other fields of human endeavor.

To correct this misunderstanding, we must have ample and sufficient communication of ideas among men and the groups they have organized. The proper development of these communication techniques, sufficient accurately to express ideas which will lead to a better understanding, is known as public relations.

Public relations is exactly what the words imply—relations with the public —the general public or a particular public. Again quoting Baus: "Public

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relations may be considered as the personality in being and in manifestation of an organization or an *individual*. It is a combination of the philosophy, the needs, and the expression of an organization or an *individual*."

According to this definition, public relations are both organizational and *individual*. This paper will deal with you and your *individual* public relations. As members of the American Association of Orthodontists and the Pacific Coast Society of Orthodontists, you are competently represented in the field of organized public relations. Your over-all needs of promotion, development, and protection—the three basic public relation problems of our parent organization—are adequately provided for and well administered by your committees appointed for this task. But what of *your* individual public relation responsibilities? Are you handling these as well as you should?

It is a common fallacy to brand all for the shortcomings of one. If your public relations are bad, it may upset a thousand routine acts of good faith. No man may rejoice at the misfortune or poor relations of another in either business or a profession without its reflecting upon himself or the whole cylinder of which he is a part.

There is a tremendous yearning on the part of man to understand his fellow man, to live in peace and harmony with him. This is attested by the fact that the greatest sale of nonfiction books for the past decade has been books dealing with a way of life; books like Dale Carnegie's *How to Win Friends and Influence People*, Rabbi Joshua Loth Liebman's *Peace of Mind*, Claude Bristol's *The Magic of Believing*, and a host of others of a similar vein.

People in all walks of life, be they clergymen, doctors, farmers, politicians, laborers, businessmen, or manufacturers, all seem to be striving for a better understanding of what makes them tick and the world go round. They strive for better public relations, for a life free from petty annoyances, frustrations, and misunderstandings. They work also to move you to *act*, to *vote*, to *buy*, to *approve*.

As a doctor conducting your own practice, you are the ambassador to your publics for the whole orthodontic profession. If the profession is to be honored and respected, your public relations must be good. Even if motivated solely by a selfish interest, they still must be good if the public is to *buy* (pay your fee), to *approve* (to consider you competent), to act (come to you as patients).

The average doctor has four publics about which he should be greatly concerned. He must have their good will if he is to succeed in his profession. Good will is a contagious thing. So are ill will, animosity, and unfavorable opinion contagious, affecting you and your practice adversely. They are certainly to be avoided, and they can be through the application of proper and sound public relation techniques.

The four principal publics you deal with are:

1. Your patients.
2. Your professional colleagues and co-workers in orthodontics, dentistry, and medicine.
3. The community leaders who by tradition turn to the professional man for help and advice on social and civic problems.

4. Your suppliers, those who sell you equipment and supplies for your office, the laboratory, and the detail men.

If you were a businessman instead of a professional man, your patients would be called customers. You would know them as the ones who put your goods or services to use. They are the ones who pay the bills, the salaries, the bonuses, and the dividends. Without these customers you would not continue in business. Consequently we should take a personal interest in them. The proper public relations approach is to restore the human element to the basic relationship between doctor and patient. The patient has a need for the feeling that he is paying his money to someone interested in him as a person.

The reception room is the front door to a doctor's community relations. A tactful receptionist can take the visitor's mind off the unpleasant implication of a waiting room. Even when the patient's first contact is a phone call requesting an appointment, your receptionist can start building good relations. Be sure your reception room is bright, cheerful, and well lighted. Have comfortable chairs and current issues of popular magazines.

Your own personal appearance and conduct are very important. They can have a good or bad psychological effect on the patient. Be friendly, but not familiar. Smile and keep in good humor. All patients want to feel their presence in the office is important. See that they receive the attention an important matter deserves.

Always remember the ideal basis for understanding and cooperation is man-to-man contact. One of the weaknesses of a profession from the viewpoint of the public is that people do not understand it. What people do not understand, they distrust. We professional men have, during the war years, been overburdened with patients and duties. We have climbed higher into our ivory towers. We have been too impersonal, too hard to get, and less understanding. This attitude contributes in no small measure to a deep distrust of the healing professions indicated by the hostile attitude of many legislators in wooing their own publics with promises of a new and better day in medicine and dentistry under socialization.

To you, the first ambassador of good will with your publics, they will react favorably or unfavorably as you personally influence them through your own attitudes. Please be human, be understanding, and be tolerant.

The orthodontist's greatest public is composed of women and children. A garrulous woman with vitality and personality, even though not a member of a so-called pressure group (that is a service club, woman's club, political party, or labor group), wields a tremendous influence either for you or against you. And as James U. Irwin expressed it speaking as Public Relations Counsel for General Motors, "Don't be last in cultivating the friendships of the women of America. They influence almost everything a man does or buys." This advice of Mr. Irwin is for the businessmen. It applies to you also. "Never underestimate the power of a woman," and your public relations on that score will be excellent.

Each age group of children constitutes an independent public of its own. In handling them, you must be just as meticulous as in your adult relationships.

Children are very observing, and the old saying "Little pitchers have big ears" is indeed true. If you want successful doctor-patient relationship with children, be first understanding. Place yourself on the level of the individual with whom you are dealing so that you can view the problem from the same vantage point as if you were a child of 6 or 10, 15 or 20.

Be genuinely interested in them, and I do mean genuinely. Beware of pretense or sham. Children, naive as they are in many respects, have an uncanny ability to detect the genuine from the spurious in their relations with adults. Many of you can vouch for the truth of this statement in regard to your own children. They are able to detect sincere anger which involves a definite punishment from the many vague threats of punishment haphazardly made.

In orthodontics you seek from your child patients one of the most sought-after requisites for public relations. That is, *cooperation*. To get cooperation if you were a businessman you would sit down and talk it over face to face with your client. If you want active cooperation from your child patient you must use this businessman's technique, too. You will find that it works. I much prefer it to sending the parents a report card on case progress or writing or phoning the parents to report delinquency in cooperation. I think the child is seriously offended, loses face, so to speak, and becomes even more difficult to approach.

We shall now proceed to our public relations with our professional colleagues and co-workers in orthodontics and dentistry.

We are all cognizant, through our code of ethics, of the responsibility we owe our professional brethren. As I have previously pointed out, another's failure in the pursuit of proper public relations reflects upon every other orthodontist and the science as a whole. So I will dismiss this subject without further ado.

By co-workers in orthodontics I refer especially to our assistants and other office help. Recent business surveys conducted by *Fortune* magazine and the Thompson Products, Inc., of Cleveland show that the major desires of employees are security, opportunity, and recognition. Your employees, even though employed by a professional man, are eager for the same socioeconomic opportunities offered in other lines of employment. Although naturally you cannot grant pensions, old-age funds, or bonuses, you can make them happy and content in their position by treating them as important individuals in your office, by removing irritating and frustrating little stupidities in office management and procedure. Make them feel their importance to you and to your practice, that their sincere application to their work is recognized and appreciated. These are little things that have a value to many individuals far above pension plans, great bonuses, and other social devices provided by large corporations to keep groups of workers contented in their jobs.

Surely you can be pleasant to one or two co-workers and keep them happy in their tasks, eager to know more about their duties, and congenial toward your patients. Come to the realization that the more an employee knows about the facts of his profession or job, the more cooperative, productive, and energetic he becomes.

Somewhere we have missed the boat in our professional relationships with dentists in general practice. They have a great misconception of orthodontics and modern orthodontic procedures as practiced by specialists in our field. Primarily, this is due to the lack of stress given orthodontics in undergraduate training. Many of the older men in dental practice have a very critical and suspicious attitude toward orthodontics. We should do something about this. I personally am offended by being called a wire bender, and by having my profession referred to as a racket.

Yes, that has happened to me lots of times, and probably most of you have had the same experience. Possibly this unsympathetic attitude of dentistry toward orthodontics is due to confusion on techniques and theories among ourselves. I do not know. But I do know that much of the resentment toward orthodontics existing in the mind of the general practitioner, dental and medical, could be removed. Upon these very men we are most dependent and by them so sorely misunderstood. It would be the proper public relations approach to expose to them the subject of orthodontics, omitting technical problems, whenever we are granted the opportunity to appear before such groups. I believe we have men in orthodontics who have the ability to present orthodontic subjects to dentists or physicians in an intelligent, interesting, and even entertaining manner and make them like it. Likewise, we should be good listeners on general dental or medical topics, and studiously attend the meetings of our local, state, and national dental associations. We, as orthodontists, must be conversant with general dental problems and be in sympathy with the ideals and aspirations of the general dental or medical practitioners, if we are to merit a congenial public relationship with them.

Our third public is our community activities, civic, and social responsibilities. We should not shirk these obligations. Civic service, it has been said, can become a springboard to a greater professional success. Doctors are frequently asked to serve on committees or boards. If invited and you are unable to serve, it is important that you decline the request in a polite and tactful manner. Express your sincere regrets of your inability to serve, so that the inviting groups retain a high estimate of you as an individual. Requests will be made for the use of your name for money, for active participation. The further you progress in your profession, the more requests you will receive. Baus suggests a simple, reasonable, and gracious way to handle these matters. Ask the requisitioners to put them in writing. He feels that most of those who ask will not be serious enough to write, or will not bother, or will forget, but they are happy at a professional man's expression of interest to want to hear more.

Through the use of this public relations technique, many of your civic, community, or social problems can be neatly dispatched without your becoming involved in so many extracurricular activities that your professional career suffers.

Our fourth and last public is our suppliers, those who sell us our equipment, our orthodontic and dental supplies, or do our laboratory work.

The representatives of these companies should be treated not as "peddlers" but with businesslike courtesy. They frequently bring news of great importance to the doctor, development and discovery in design of material and equip-

ment. Common courtesy to a salesman can be a profitable practice. Remember that a salesman in his work travels over a large area. By the nature of his occupation he meets many people. If he is well treated when he is trying to sell, he responds with friendship and tends to become a herald of the virtues of those who treat him kindly.

In conjunction with your suppliers there exists a credit relationship, a responsibility which must be meticulously embraced. People are very easily aroused over money matters. Your reputation as a professional man of integrity in your community may hang upon this slender thread of credit; guard it well. Be known as a man of your word in money matters.

As far back as Feb. 15, 1940, your importance as an ambassador of public relations was recognized by your American Association of Orthodontists in a bulletin published by the Association under the chairmanship of Dr. F. W. Sorrels. This bulletin offers some "Practical Suggestions for Effective Public Speaking," "Outlines for Talks to Groups of Doctors, Dentists, and Nurses," and a series of "Specimen Radio Talks." The introduction says, "The purpose of public relations in the field of orthodontics is the education, guidance, and protection of the public." It further states, "This can be accomplished without personal aggrandizement of individuals." It recommends censorship by the recognized committee for public relations of written material to prevent the above abuse; it urges *individual members* to take on more responsibility in cooperating with the following groups in a public relations program.

Professional Field

a. Physicians.
b. Dentists.
c. Dental hygienists.

Public Health Field

a. Health officers.
b. Public health nurses.
c. Nutritionists.
d. Voluntary health associations.
e. Public health students.
f. Nurses' training schools.

Public School Field

a. School administration authorities.
b. School physicians, dentists, and nurses.
c. Health teaching supervisors.
d. Parent-teacher associations and women's clubs.
e. Child psychologists and vocational advisors.

It is not an afterthought to bring to your attention this new host of publics recognized by your committee on public relations as worthy of your best efforts in personal relationships. It is rather to emphasize how many publics can be affected by your good or bad relationships. Note their interlocking positions.

Realize how important it is for you to see the over-all picture, the multitude of publics which can be affected by your attitudes. Remember that all these publics are sealed cylinders too, all striving in their *fields*, through their *organizations* and their *individual* members for the same basic public relation requirements of organization, achievement, and protection. They, too, will be working on you to approve, to buy, and to act.

I have endeavored to bring to your attention in this paper those unseen motivating forces in society, working for or against organizations and individuals, pitting one against the other for good or evil. I have attempted to make you aware, as individual practitioners of orthodontics, of your own immediate personal responsibility in public relations. In the future may the science of orthodontics as a whole be favorably considered by the public and worthy of this esteem—because of you.

520 Medical-Dental Building.

DISCUSSION

Ben L. Reese, Los Angeles, Calif.—It has been my privilege to have this paper in my possession for some time, and I have given it considerable study. I have enjoyed its contents very much. It is so *well written* and the *salient points* are so graphically brought out that there is very little for me to cover in this discussion.

I am thoroughly in agreement with the writer when he states, "Certain business *techniques* might be applicable to the profession without *foregoing* the code of ethics or *jeopardizing* our standing in the community." To me this makes *sense* and we in this society can well afford to give it *serious consideration.*

I feel it would be well for us to give some thought to his comparison of orthodontics as being a *sealed cylinder.* The first six years of my professional career were spent in general dentistry. Due to this experience I have always had the *conviction* that orthodontics is only one part of dentistry as a *whole.* We should never allow ourselves to become *sealed so tightly* in the "orthodontic cylinder" that we may forget this fact. I believe this may be particularly true of the younger men of today who enter the field of orthodontics immediately after graduation from college and without the *amplifying experience* of general dentistry.

We need *better* and *closer* contacts with our fellow dentists. Some way should be found to *enlighten* the general practitioner as to the conditions possible of treatment. Too often we hear of some dentist giving *negative* advice on some case *comparatively easy* of treatment. The big problem is how to *stimulate the interest* of the general dentist in the orthodontic possibilities that exist for his patients in need of this service. This can best be brought about by the use of a little *reciprocity between the cylinders* of the profession. By attending our dental meetings *more regularly* and showing a *genuine interest* in the general practitioner's problems, as well as our own, a *closer cooperation* will develop.

Dr. Walls states in his paper, "As members of the American Association of Orthodontists and the Pacific Coast Society of Orthodontists we are competently represented in the field of organized public relations." We always have our public relations committees, but too often our efforts *remain static* at this point. With this I am familiar, since I was chairman of the public relations committee in this society for the last two years and my report is that nothing was accomplished. Whatever has been undertaken in this regard in *presenting orthodontics* to our local community organizations has been done by the individual orthodontist. Most times I fear for his own aggrandizement. During the latter part of the 1930's some good work was being done in the American Association of Orthodontists by the public relations committee of which Dr. Sorrels was chairman. The result of this work was mentioned by Dr. Walls in his paper. However, along came the war and with it *an abundance of patients,* causing a waiting list to pile up in every orthodontic office. *Now* this situation

seems to be changing. At present we could use the additional patients the continuation of the committee's work would be bringing us. I sincerely recommend a more *vigorous prosecution* of this public relations work.

There is an *interesting comparison* to be drawn between *our profession* and the *business world.* During the war and in the years immediately following there was a noticeable display of *indifference* and *independence* among the sales people in our stores. This seemed to be true also *of all types* of business. In the last few months we are seeing a change of attitude in the business world. Stocks of merchandise are piling up in our *stores and warehouses.* We are again seeing special sales advertised. Also the attitude of the clerks in the stores is changing. *Indifference* and *independence* are being replaced by *courtesy* and *salesmanship.*

In *dentistry* somewhat the same change is taking place. *Now* new patients can usually get appointments within the week instead of being placed on a waiting list for several months. This same condition *either is* or in all *probability will* be taking place in our orthodontic practices. Should this be true we will probably wish that the program of public relations so well started had been carried on. *Also,* the *take it* or *leave it attitude* of our office personnel in many instances will need to be changed. This impression can so easily be given to the new patient even in the *tone of voice* and may not be *intentional.*

Among our patients in the age group old enough to come alone to the office, how often do we see the parents of these patients? *Many times* the parents are not seen after the first arrangements have been made for the treatment of the case. *Sometimes* the parent will even try to make *all arrangements* over the phone, not even intending to come in for consultation. *If* we allow situations like this to develop, we are *definitely* "missing the boat," as it were, for *individual public relations.* As treatment *progresses* on these cases we should call the parents in occasionally to show them the progress of the case as well as to promote *good will* and *cooperation.* They will then be more *enthusiastic boosters* for us and *orthodontics* in general.

As Dr. Walls has stated, we should show a *genuine interest* in our child patients. *This relation* with our patient definitely pays dividends. I have frequently had some parent tell me that they are coming *to me* for the treatment because the child *likes* me better than the *other orthodontist. The ones* who are telling some other orthodontist the *same story* as to why they are *going* to him instead of *me* are the ones I never hear from again concerning treatment.

In closing let me repeat the last few sentences of Dr. Walls' paper. He says, "I have attempted to *make you aware,* as individual practitioners of orthodontics, of your own *immediate personal responsibility* in public relations. In the future may the *science of orthodontics as a whole* be *favorably considered by* the public and *worthy* of this esteem—because of you."

ADAPTATION TO EMBOUCHURE AS A FUNCTION OF DENTOFACIAL COMPLEX*

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MEMBERS of the orthodontic profession have long known that irregularities of the teeth and their supporting structures interfere with many and diverse functions for which these parts are utilized in the process of ordinary living. For this reason, the profession systematically has altered dentofacial irregularities in such a way as to obtain a greater adequacy of function. It is not important here to depart into a technical discussion of the many kinds of irregularities that are found, nor to discuss the several functions with which they interfere. It is sufficient to recognize that wind-instrument playing is one of the group of functions that depend, at least in part, upon the teeth and their supporting structures.

To date, so far as the literature reveals, orthodontics has paid little formal attention to the dentofacial problems of the musician. Yet, problems of this nature require attention if we are to provide service for this group of individuals. The number of wind-instrument players is sufficiently large to warrant a consideration of problems potentially peculiar to this group.

The jaws, the teeth, the lips, and associated structures are used continuously in the playing of wind instruments. For this reason, it is important to the musician to be able to use these structures at their best functioning level in order to fulfill adequately the varied and often difficult musical requirements. These dentofacial features, as well as the mouthpieces of wind instruments, are not fixed in form. Rather, they both differ widely from individual to individual. Their functions are also likely to be different, at times permitting easy adaptation to the instrumental mouthpiece, and at other times making this adaptation very difficult. This presentation is concerned with the adaptation of different structural types to embouchure. It proposes to estimate the dentofacial requirements for wind-instrument musicianship.

EMBOUCHURE

Embouchure is a technique of using the lips, teeth, jaws, and related structures against the mouthpiece of a musical instrument to produce a tone. In this activity, physical adaptation is dependent both on the dentofacial form and on the shape of the mouthpiece of the instrument used. In view of our knowledge

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about the differences in facial form, it is reasonable to expect that some individuals will make better adjustment than others. This assumption also holds when we consider the varied shapes of mouthpieces within and between groups of wind instruments.

For purposes of this study, musical instruments are classified as brass and wood wind. In general, brass instruments can further be designated as small and large. The small instruments have small cup-shaped mouthpieces and include trumpet, bugle, French horn, and alto horn. The large instruments have large cup-shaped mouthpieces and include trombone, baritone, bass horn, and tuba. Wood-wind instruments are considered herein as a group, but may be classified as: (1) instruments having a single reed clamped to a mouthpiece, (2) instruments having a double reed for a mouthpiece, and (3) instruments having an aperture in the head of the instrument serving as a mouthpiece.

Fig. 1, *A*. Fig. 1, *B*.

Fig. 1, *C*.

The adaptation to small brass embouchure is shown in Fig. 1, *A*. During adaptation, the lips are drawn back into a smiling position and the mouthpiece is placed lightly against both upper and lower lips. To assist in this accommodation, the lower jaw is shifted downward and forward with the upper and lower incisors slightly apart to permit the flow of the air stream between them. Ideally, the incisors support the upper and lower lips with equal pressures.

The adaptation to the larger trombone mouthpiece is like that of the trumpet and is shown in Fig. 1, *B*. Fig. 1, *C* shows adjustment to the tuba mouthpiece.

Adaptation of the dentofacial structures to the wood-wind instruments depends somewhat upon the type of instrument used. For the single-reed instrument, as shown in Fig. 2, *A*, the lower lip is drawn slightly over the lower teeth and about one-half of the mouthpiece is placed between the lips. In this position

Fig. 2, *A*.

Fig. 2, *B*.

Fig. 2, *C*.

the reed rests against the lower lip and the upper teeth rest upon the mouthpiece. The lips are then drawn back and closed firmly around the mouthpiece so that no air can escape. Here again, the lower jaw is thrust downward and slightly forward to support the lip and the instrumental mouthpiece.

Both lips are drawn slightly inward to cover the teeth during adjustment to the double reed. This relationship is shown in Fig. 2, *C*. About one-eighth

te one-quarter of the reed is placed in the mouth and rests firmly on the lower lip. Both lips are then closed to prevent air escape. Again, the teeth support the lips and the mandible moves slightly downward and forward during adjustment. For instruments with an aperture in the head of the instrument, less precision in jaw movement is required. As shown in Fig. 2, *B*, the lower lip is drawn slightly inward and the lips are closed, allowing only a very small opening in the center of the mouth over the aperture.

From the foregoing discussion, it is apparent that there is considerable variation in the shapes of instrumental mouthpieces, as well as of the jaws, teeth, lips, and associated structures. All of these variations must be considered when studying the role of the dentofacial complex in the development of embouchure.

THE DATA

An opportunity was provided to appraise some of the interferences that dental irregularities impose upon wind-instrument playing. An experiment was set up for this purpose. It was designed to estimate the role of the teeth, lips, jaws, and related structures in the development of embouchure and to study the adjustment of these parts to embouchure. Material for study was obtained by examining one hundred wind instrumentalists, selected from members of the University of Michigan bands, students in the University School of

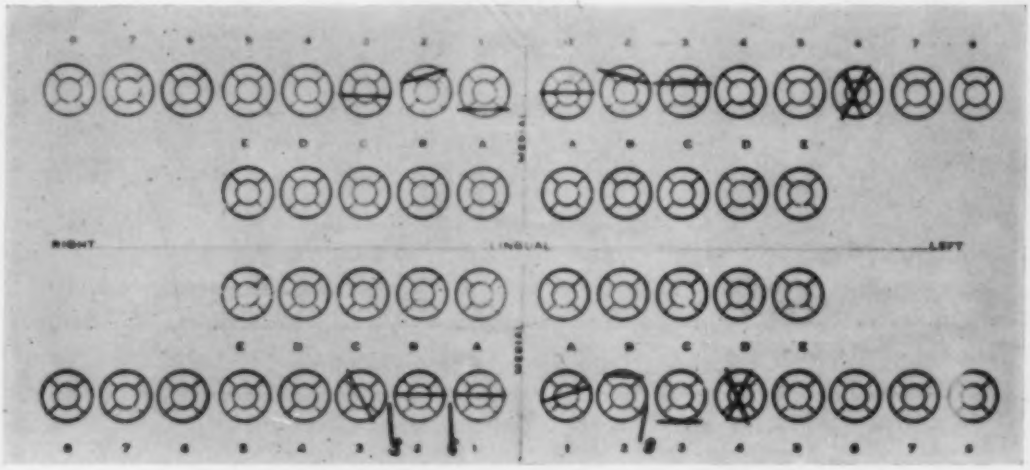

Fig. 3.—Oral examination record form.

Music, and music teachers in Ann Arbor during the academic year of 1943-1944. The selection of individuals for examination was based on musicianship and the types of instruments played. Although variable degrees of musical ability were represented, the aggregate was of a semiprofessional nature.

Two sets of observations were obtained on each individual. The first of these is illustrated in Chart I. Here the attention is centered upon the major features of the dentofacial complex. Although the inclusion of other details about occlusion would be warranted, the ones shown appear most pertinent to the immediate problem.

Fig. 3 is a section of the systematic oral examination record form used in the Orthodontic Clinic at the University of Michigan. It enables the recording of many details of the dentition itself, too extensive and varied in nature to be allocated reasonably into the systematic form of Chart I. Rotation of individual teeth, spacing, mutilation, maxillary protrusion, and retrusion were recorded in

CHART I. DENTOFACIAL EXAMINATION

Name		Sex	Age
Address			Date
	OCCLUSION		
Normal		Irregularities	
Class I (Angle)		1. Mutilation	
			Anterior
			Posterior
Class II (Angle)	Degree in Cusps	2. Anterior Crowding	
			Maxillary
			Mandibular
1. Division 1 Bilateral		3. Anterior spacing	
2. Division 1 Unilateral		4. Maxillary protrusion	
3. Division 2 Bilateral		5. Cross-bite	
			Anterior
			Posterior
4. Division 2 Unilateral		6. Overbite	
			Shallow
			Medium
Class III (Angle)	Degree in Cusps		Deep
			Impinging
1. Bilateral		7. Maxillary retrusion	
2. Unilateral		8. Open-bite	
			Mild
			Medium
			Extreme
	OTHER OBSERVATIONS		
Lip Form			Tapering
	Short		
Length	Medium	Arch Form	Ovoid
	Long		Square
	Thin		Short
Thickness	Medium	Tooth length	Medium
	Thick		Long

CHART II. EVALUATION OF EMBOUCHURE

Name:

Address:

Age: Sex:

1. Instruments which you play.
2. Instrument which you major in.
3. Have you ever had any orthodontic treatment? If so, why?
4. If no treatment, would orthodontic correction have helped?
5. Are you aware of any pain or discomfort in/or around the teeth while playing a wind instrument? (i.e., pain in/or around the teeth, tiring of the oral supporting structures, or pain to the lips.)
   a. What instrument caused the pain or discomfort?
   b. Is the discomfort immediate, or does it occur after a considerable amount of playing?
   c. Does difficult music (difficult for you, or generally considered difficult) hasten the onset of discomfort?
6. Discussion of embouchure difficulties which you cannot account for (if any).
7. Are there any difficulties which you cannot account for?

this manner. Correct alignment of an incisor was expressed by drawing a line through the mesiodistal center of the circle. Rotations were recorded by placing lines at an angle comparable to the positions of the teeth observed. Placement of the line to the lingual indicated retrusion. Placement of the line to the labial indicated protrusion.

The evaluation of embouchure was examined as shown in Chart II. Questions relating to orthodontic care were included to detect opinion about the value of this service to musicians. Item 5 served to uncover difficulties in adjustment to embouchure. The instrument to which the musician adjusted poorly was recorded under *a*. Items 6 and 7 presented the history of embouchure adaptation.

ANALYSIS

The detailed distribution of instrumentalists is shown in Table I. Thirty-six small brass, twenty-six large brass, and thirty-eight wood-wind players were examined. They include twelve individuals with normal dentitions, thirty-eight with Class I malocclusion, twenty-eight with Class II malocclusion and twenty-two with Class III malocclusion. Twenty-six musicians adjust poorly to embouchure.

TABLE I. DISTRIBUTION

	ADJUST POORLY TO EMBOUCHURE			ADJUST WELL TO EMBOUCHURE			
	BRASS		WOOD WIND	BRASS		WOOD WIND	
	SMALL	LARGE		SMALL	LARGE		TOTAL
Normal	0	0	0	4	2	6	12
Class I	4	0	0	10	10	14	38
Class II	11	4	1	3	2	7	28
Class III	2	3	1	2	5	9	22
Total	17	7	2	19	19	36	100

Difficulties in adaptation occur most frequently among small brass instrumentalists (47.2 per cent), less frequently among large brass instrumentalists (26.9 per cent), and infrequently among wood-wind musicians (5.2 per cent). Embouchure difficulties attain the greatest frequency among small brass instrumentalists with Class II malocclusion. Among individuals with Class III malocclusion, difficulties are distributed evenly. With the Class I grouping, only small brass instrumentalists adjust poorly. In contrast, all players with normal dentitions adapt well to embouchure.

Explanation of the partial negations within Class I and Class III malocclusion (Table I) seems to be dependent on structural differences between basic types of facial deformities. Apparently the addition of dental irregularities to the Class II type accounts for the marked decrease in adjustment within this group. For purposes of obtaining a brief overview of these influences, it is now desirable to consider the effects of malocclusion upon adaptation to embouchure.

The manner in which various dentofacial irregularities affect the adjustment to embouchure is best seen by examining the various types in function. The analysis reveals that a Class II arch relationship is most undesirable for brass embouchure. This fact is clearly brought out in Table I where approximately three-fifths of all musicians with distoclusion who were examined in this study

adjusted poorly to embouchure. In general, difficulties in adjusting are proportional to the degree of malocclusion present. Usually, the extreme distoclusion, as shown in Fig. 4, *A*, creates an adjustment problem for the brass player. Small brass players with this deformity adjust less readily than do larger brass players, and bilateral discrepancies are less efficient than unilateral ones. Here the posterior relationship of the mandible is not in harmony with the anatomic requirements for function. The amount of forward movement of the lower jaw needed to position the lower incisors and lip directly below and even with the upper incisors and lip during adjustment is often too great for satisfactory function. On the other hand, mild distoclusion, as shown in Fig. 4, *B*, interferes less with musical ability. For individuals with a distoclusion of one-half cusp or less, the adaptation problems are more likely to result from irregularities of the teeth and lips. In addition, as shown in this study, distoclusion in itself does not interfere with the clarinet or other types of wood-wind embouchures.

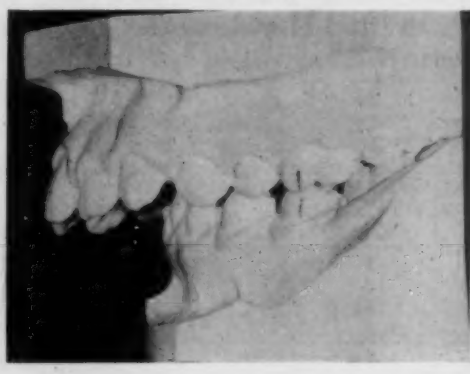

Fig. 4, *A*.

Fig. 4, *B*.

Fig. 4, *C*.

Mesioclusion provides a somewhat different problem from distoclusion. Only mild discrepancies in Class III arch relationships, as shown in Fig. 4, *C*, were observed in this study. Difficulties distribute among all types of instrumentalists and most especially among wood-wind players. Here the protruded

lower jaw carries the front lower teeth to a position too far forward for the lower lip to fold easily over them during playing. Often mesial relationships of the mandible associated with lower anterior irregularity are disturbing to both large and small mouthpiece brass players. Although extreme mesioclusion was not encountered, there is little doubt, on the basis of the present finding, that the interference would be so great as to make wood-wind playing practically impossible and brass instrument playing very difficult.

Few musicians with Class I malocclusion experienced embouchure problems. For these individuals, adjustment problems were due to irregularities of the teeth and/or lips.

In addition to functional inefficiencies arising from basic jaw discrepancies, there are many problems associated with irregularities of the teeth and lips. In general, tooth and lip irregularity increases the difficulty of adjustment for the musician when arch discrepancies are present. At times, these conditions are disturbing in themselves. This assumption does not hold true in all cases, however. For this reason, each irregularity must be examined during function for its probable effect upon the adjustment to embouchure.

Fig. 5, *A*. Fig. 5, *B*.

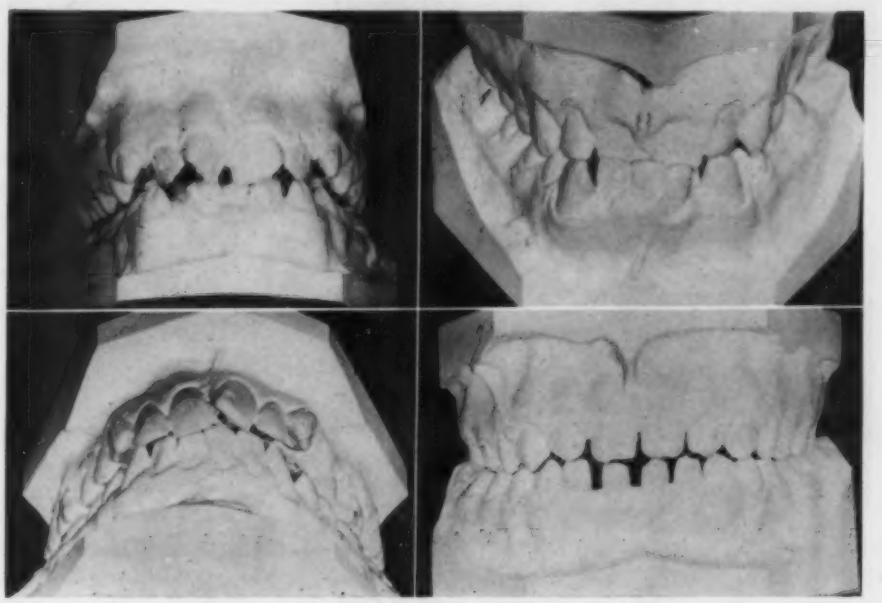

Fig. 5, *C*. Fig. 5, *D*.

Crowding and/or rotation of anterior teeth is one of the dental irregularities considered undesirable for wind instrument playing. Conditions similar to those in Fig. 5, *A*, *B*, and *C*, were observed in fully one-third of all individuals examined. These occurred among all types of instrumentalists and were disturbing to both the brass and wood-wind players. The effects upon musicianship appear to vary in accordance with the type of arch relationship associated with the irregularity. Maxillary anterior crowding accompanying distoclusion (Fig. 5, *A*) was troublesome for over one-half of the brass instrumentalists. Similarly,

maxillary crowding in a Class III malocclusion (Fig. 5, *B*) was disturbing, and all brass players with this irregularity experienced embouchure difficulties. Crowding in Class I malocclusion (Fig. 5, *C*) was troublesome to a lesser number of the small brass players who exhibited it.

Fig. 5, *A*, *B*, and *C* also show several types of lower anterior crowding. Occasionally, this condition disturbs brass instrumentalists. The lips are irritated by the sharp corners of the rotated teeth when they are shifted forward to assist in support of the instrumental mouthpiece. Here again, in mandibular, as in maxillary crowding, difficulties occur more often when associated with mesioclusion or distoclusion than when these arch discrepancies are absent.

A few cases of extreme anterior spacing of the maxillary and mandibular incisors were encountered. An example is shown in Fig. 5, *D*. Although the data are limited, it appears significant that all instrumentalists with this condition experienced difficulties with embouchure. All complained of discomfort and early tiring of the supporting alveolar bone during playing. On the other hand, the presence of mild spacing is apparently of little consequence.

Fig. 6, *A*. Fig. 6, *B*.

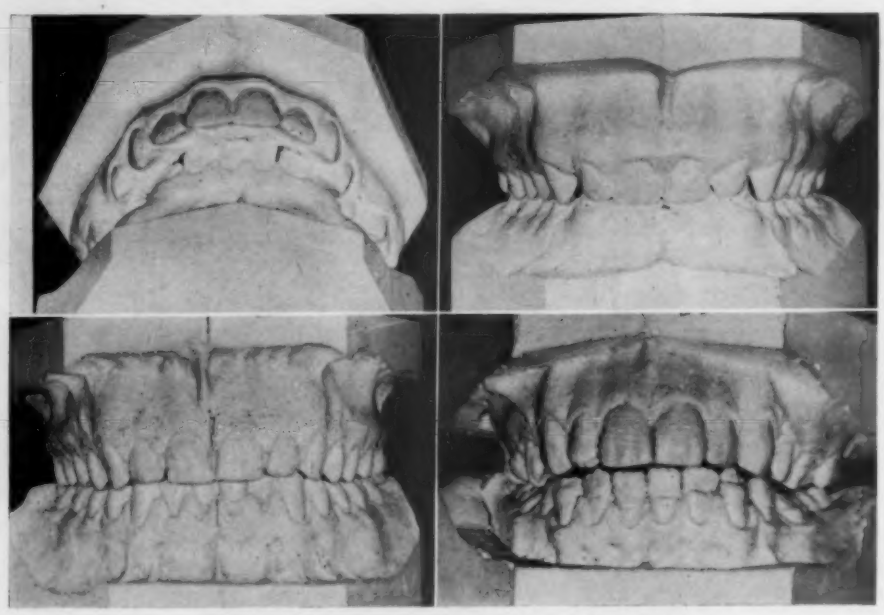

Fig. 6, *C*. Fig. 6, *D*.

An overbite relationship was observed in nearly all of the one hundred individuals examined. Twenty-six per cent of the Individuals adjusted poorly to embouchure. Although depth of bite does not directly affect adaptation, it appears to be a good measure of adjustment or nonadjustment. The degrees of overbite encountered ranged from deep impinging conditions to shallow end-to-end relationships. Most deep impinging overbites, similar to that shown in Fig. 6, *A*, were associated with extreme distoclusion. Here the lower jaw must be shifted downward as well as forward when adapting to the instrumental

mouthpiece. The detailed data show that for instrumentalists with a Class II malocclusion, the deeper the overbite, the greater the tendency for embouchure difficulties. In extreme cases, satisfactory embouchure is aften impossible. In the deep (Fig. 6, *B*) to normal one-third overbites (Fig. 6, *C*), usually associated with Class I arch relationships, the musician has only to adjust vertically when adapting the lips, teeth, and jaws to the mouthpiece. In this group, a majority of the Class I brass players adjusting poorly had deep bites. Most shallow to end-to-end bites (Fig. 6, *D*) examined were associated with protrusive tendencies of the mandible. Mild or extreme crowding of the lower anterior teeth was often observed. As was pointed out in the discussion about crowding and/or rotation of anterior teeth, the combination of a shallow protrusive overbite with irregular incisors often interferes with both brass and wood-wind embouchures.

Fig. 7, *A*. Fig. 7, *B*.

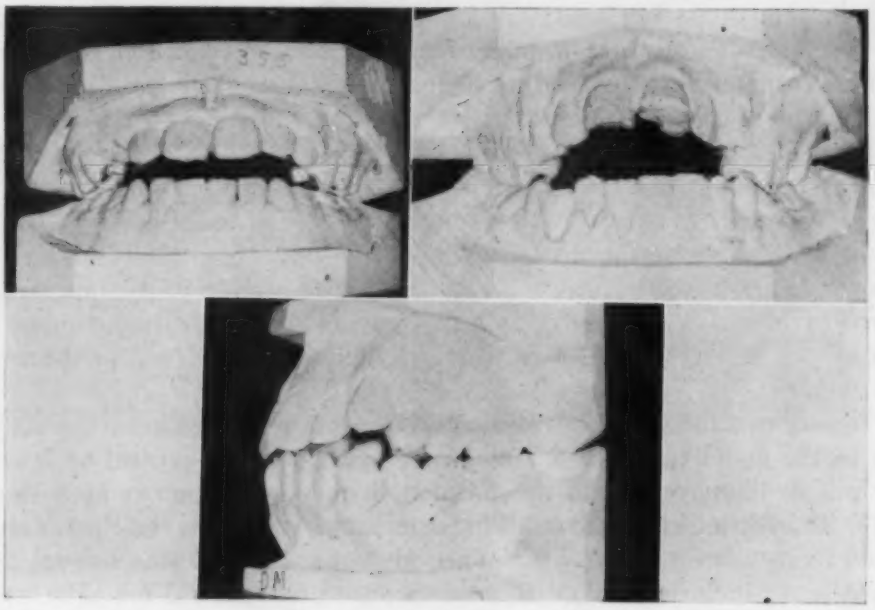

Fig. 7, *C*.

An open-bite relationship of the maxillary incisors to the mandibular incisors was observed in five of the musicians examined. Although the data are limited, the effect of this condition on those exhibiting it is sufficient to provide general information. Mild open-bites, as shown in Fig. 7, *A*, are not troublesome for brass instrumentalists. The extreme types, however (Fig. 7, *B*), seriously interfere with brass embouchure. All musicians with extreme open-bites failed to make the adjustments necessary to support the instrumental mouthpiece in a satisfactory manner. On the other hand, with one exception, open-bite appears to be of little concern to the wood-wind player. The one exception was observed in several individuals having shallow overbites. In these dentitions, the maxillary canines and lateral incisors have failed to erupt completely to the plane of occlusion. As a result, a type of partial anterior openbite occurred opposite the

corner of the mouth. A similar condition is shown in Fig. 7, *C*. The shift of the mandible forward and downward during the adjustment to embouchure served to increase the open-bite at these points. The condition was particularly disturbing to wood-wind instrumentalists. These individuals experienced difficulty in preventing the escape of air through the corners of the mouth during instrumental activity.

Eleven of the one hundred musicians had a maxillary protrusion similar to the type shown in Fig. 8, *A*. Six of the instrumentalists with protruded maxillary incisors were brass players, and five played wood-wind instruments. A majority of the brass instrumentalists adjusted poorly to embouchure. Here again, the data, although limited, suggest how this condition influences adaptation to embouchure. Maxillary protrusion was troublesome to all brass players who exhibited it. The labial inclination of the upper incisors interfered with the lip placement and increased the amount of jaw movement needed to place the teeth in a supporting position. The general absence of this deformity among brass players suggests in a negative manner that the condition is undesirable for brass embouchure. Wood-wind instrumentalists had no difficulty with maxillary protrusion.

Retrusion of all upper incisors is shown in Fig. 8, *B*. In no case did this condition present a problem for the wind instrumentalist. Rather, when a Class II arch relationship exists, it is of advantage to the brass player. Here, the amount of jaw movement needed to make the adjustment is greatly reduced. However, central incisor retrusion associated with crowding, rotation, and mild protrusion of adjacent teeth gives brass players a great deal of trouble. Malocclusions of this type were recorded under crowding and will be discussed in this category.

Twenty-two individuals exhibited a cross-bite relationship of the maxillary teeth to the mandibular teeth. When a single maxillary central or lateral incisor was in linguoversion to its opponent in the mandibular arch, as shown in Fig. 9, *A*, adjustment of the small brass mouthpiece against the lip labial to the crossed tooth was often difficult. When all upper incisors were lingual to well-aligned lower incisors (Fig. 9, *B*), embouchure problems did not arise. On the other hand, when anterior cross-bite relationships appeared in association with crowding, the wood-wind players experienced lower lip irritation.

Only a few of the individuals examined exhibited mutilations involving the anterior portion of the dentition. None were disturbed by this condition. There is every reason to believe, however, that the loss of a single tooth could affect embouchure in the same manner as the cross-bite of a single incisor. In all of the cases examined here, drifting of adjacent teeth reduced the edentulous space to a width of one-half tooth or less. The complete absence of this condition among all individuals examined serves further to point out the vital role of the dentition in adjustment to embouchure.

Tooth length varies a great deal and can be studied in all figures illustrating this discussion. Although extremes are rarely encountered, definite differences in length are observable. It will be noticed that tooth length is a relative relationship, dependent upon the over-all size of the tooth and the surrounding

structures. In spite of the abundance of data, the only general conclusion available is that short incisors appear among a majority of the brass instrumentalists adjusting poorly.

Fig. 8, *A*.

Fig. 8, *B*.

Fig. 9, *A*.

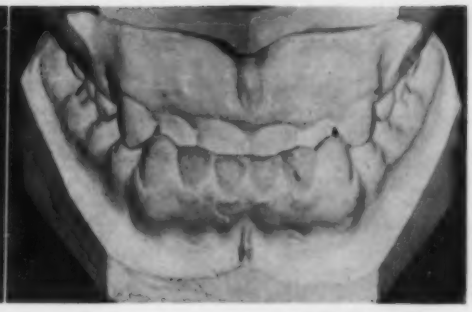

Fig. 9, *B*.

The investigation of the role of the lips in the playing of wind instruments revealed some information of a general nature. Thick lips were observed in a majority of Class II brass players adjusting poorly. Thin lip form appeared among many Class III brass players with adaptation difficulties. In addition, a tendency for a short upper lip was noticed among the Class I brass instrumentalists with embouchure problems. Also, the poorly adjusted Class I brass players had longer lip form. However, the data are not clear-cut, and it is difficult to estimate the role of lip size in adjustment to embouchure. It appears more important to consider these parts important as they combine with other variations of the teeth and jaws during function. There is little evidence to show variation in lip form, by itself, as highly influential in the production of a satisfactory or exceptional wind instrument-embouchure.

DISCUSSION

Throughout the analysis, discussion about adaptation to embouchure has proceeded with only occasional reference to the complaints offered by the instrumentalists who adjusted poorly. The nature of these complaints varies a great

deal, and each is individually peculiar. However, for purposes of discussion, they have been grouped into six categories and are listed in Table II. They will be discussed in the order of the frequency with which they occur.

Six musicians complained of "tiring of the supporting structures during playing." They also complained of pain and fatigue in the supporting structures and teeth after relatively short periods of instrumental activity. Occasionally there was pain and fatigue in the muscles of the lip and in the floor of the mouth. As shown in Table II, one of the large brass players had a Class III malocclusion and the other two had mild distoclusions. All had marked spacing of the anterior teeth. Marked anterior spacing was also found in one of the two wood-wind players and the other had retruded lower incisors associated with a Class II malocclusion. For all of these individuals, the adaptation problems centered around discomfort and pain of the teeth and supporting bone and/or early fatigue and pain of the muscles of the floor of the mouth. This distress usually occurred after a short period of instrumental activity. For some, the discomfort reduced the musical efficiency; for others actual playing was prevented for varying amounts of time. The one individual with a Class I malocclusion had extreme anterior spacing, but complained of early tiring of the lips during playing.

TABLE II. NATURE OF COMPLAINT

NATURE OF COMPLAINT	OCCLUSION				TOTAL
	NORMAL	CLASS I	CLASS II	CLASS III	
Tiring of supporting structures	0	1	2	3	6
Have to bring mandible forward	0	0	6	0	6
Cause unknown	0	0	5	1	6
Irregular, rotated, or protruding incisors	0	1	3	1	5
Lip form	0	2	0	0	2
Open-bite	0	0	0	1	1
Total	0	4	16	6	26

In considering the dental conditions associated with this type of complaint, it is apparent, with one exception, that marked spacing of the anterior teeth is common to all. The exception is found in the wood-wind player whose lower incisors tip sharply backward. In addition, with the exception of the small brass instrumentalist, the difficulties are associated with large brass and wood-wind mouthpieces which often subject heavier pressures against the lips and teeth during playing. In view of these circumstances, it is evident that most of the complaints of this group are associated with instability of the incisor teeth as they function in support of the lips during playing. The lack of contact of adjacent teeth or the retruded position of the lower incisors allows the pressure from the mouthpiece to be transmitted directly to the supporting structures instead of being dispersed to closely contacting adjacent teeth in the anterior part of the dental arch. As a result of this pressure, it is probable that low-grade inflammatory processes are set up, similar to the initial changes during orthodontic treatment, and result in pain and discomfort of varying intensities.

Although only mild discrepancies in arch relationship were observed among these individuals, it was noticeable that even the slightest shift in jaw positioning required during adjustment embouchure increased the problem of placing the mouthpiece without increasing the pressure against the supporting lips and teeth. For this group then, closure of the anterior spacing or support of the spaced teeth is indicated in order to give better function for the individual during adjustment to embouchure.

Six musicians complained of "inability to shift the lower jaw forward." All players, with one exception, were brass instrumentalists, and the majority played the small brass instruments. Here, as was pointed out in the analysis, difficulties in adjustment appear in proportion to the amount of distoclusion. Class II arch relationships of one cusp or more were much more troublesome than when a discrepancy of one-half cusp or less was present. The extreme distoclusion is not in harmony with the anatomic requirements for brass embouchure. The instrumentalist must shift his lower jaw forward to place the lower incisors directly below the upper incisors and thereby obtain the proper position to support the mouthpiece equally against both upper and lower lips. For individuals in this group, the jaw shift, when added to the ordinary manipulations necessary during instrumental activity, rendered adaptation highly unsatisfactory, and at times impossible. The adaptation of an extreme distoclusion to a small brass mouthpiece requires a great deal of precision in jaw movement. The trombonist, for example, has a great deal more opportunity to adapt a retruded lower jaw to a medium-sized mouthpiece than does a cornettist adjusting a similar condition to a small mouthpiece.

Here again, orthodontic correction, as an aid to function, is indicated. Distoclusion in its various degrees is generally well handled by the orthodontist. The establishing of functional harmony between the dental arches by creating a balanced occlusal relationship and a one-third to one-half incisor overbite would reduce much or all of the necessary jaw shift needed by the individual with a Class II arch relationship. The possibilities of these changes should be pointed out to music teachers and instrumentalists troubled by such conditions.

The complaints headed "unsatisfactory adjustment—reason unknown" are highly significant when the case histories are examined. Six musicians complained of unsatisfactory adaptation to embouchure, but were unable to point out the cause of poor adjustment. Five were brass instrumentalists and one played a clarinet. Examination of the dentofacial relationships of these individuals revealed, with one exception, that all brass players had extreme distoclusions. Here again, the available information emphasizes how unsatisfactory mandibular retrusion is for brass playing, and especially for the small mouthpiece brass instrumentalists.

A Class II arch relationship of one-half cusp and a short upper lip was observed in the other brass player of this group. He also had mildly protruding maxillary incisors. The presence of the protruding incisors usually increases the amount of jaw movement needed during adjustment for this type of instrumentalist. For this reason, the combination of distoclusion, short lip, and protruding maxillary incisors is often inefficient for brass instrument playing. It

may have been the cause in this case. The clarinetist who complained of poor adjustment also had a mandibular retrusion and some incisor irregularity. As has been pointed out in the analysis, incisor irregularity appearing in the mandible is often troublesome for wood-wind playing. Again the evidence serves to point out the effect of dentofacial irregularity upon wind instrument musicianship, and further demonstrates the value of orthodontic services to individuals who are troubled by this irregularity.

The complaint, "difficulty in adjustment of the instrumental mouthpiece to the front teeth," came from individuals having one of three types of dental irregularity. These included crowding and rotation of the anterior teeth, protrusion of the incisors in the upper jaw, and irregularity associated with cross-bite of one or more of the anterior teeth.

The instrumentalists troubled by crowding and/or rotation of anterior teeth complained that the sharp corners of the rotated crowns irritated the lips as they supported the instrumental mouthpiece. However, it is difficult to determine when the condition will be disturbing to embouchure. This fact is brought out by reviewing all cases of crowding relative to adjustment and non-adjustment. Of thirty-six individuals with upper crowding, fourteen adjusted poorly; only five complained of the irregularity as the direct cause. Out of forty individuals who showed mandibular crowding, twelve adjusted poorly; only three complained of the irregularity as the direct cause. It appears, then, that although anterior crowding and rotation is associated with disturbances in embouchure, it will be the direct cause of poor adaptation for only a small number of individuals who display it.

Two individuals with protruding maxillary incisors complained of this irregularity as the immediate cause of their difficulty. They were brass instrumentalists. Both had slightly less than a one-half cusp distoclusion along with the protrusion. In one case, the lateral incisors protruded sharply alongside normally inclined central incisors. For this individual, the protruded lateral incisors irritated the lip when the mouthpiece was placed against it. In the other case, all incisors jutted outward and the amount of jaw shift needed to bring the lower jaw and teeth forward resulted in an uncomfortable position not satisfactory for long periods of playing. Although the number of complaints examined here is limited, the information definitely points out the disadvantages of maxillary incisor protrusion for the brass instrumentalist.

All of the individuals troubled by an anterior cross-bite exhibited borderline Class III arch relationships. Two small brass and two wood-wind players adjusted poorly to embouchure. One brass instrumentalist had a single central incisor crossed and the other had a single lateral incisor crossed. Both complained that the lingually positioned single incisor removed support from the lip and forced them to replace the instrumental mouthpiece unevenly against the lip. Both wood-wind players complained that the irregularity resulting from the lingually posed incisors irritated the lower lip as it rested against these teeth during function.

In spite of the exceptions pointed out in the discussion about crowding and rotation, the removal of dental irregularities which result in difficult adjust-

ment of the mouthpiece to the incisors is often necessary. In most cases, the orthodontist can align crowded and rotated incisors, reposition protruded incisors for better function, and correct disturbing cross-bites. Again, he should be quick to point out the value of this service to the troubled instrumentalist or to the individual who contemplates wind instrument study.

Two individuals reported an "inability to attain adequate range and control in tone production" due to poor lip shape. Both were small brass instrumentalists and had short upper lips. They blamed the short lip for the inability to attain range and tone control with their instrument. Aside from these two cases, the information obtained in this study shows variation in lip form to be of little significance. However, in view of the importance placed upon lip form by some musicians, it is quite possible that other methods of examination may reveal findings not uncovered here. On the other hand, it should be pointed out that there are various and differing opinions among skilled wind instrumentalists as to the type of lip best suited to the various types of embouchure. Lip form differed considerably among the many excellent brass players examined in this study. In addition, it is possible that lip and muscle exercises may increase the flexibility of these parts and be of value to musicians who claim to have difficulty.

An "inability to support the mouthpiece and to control the air stream" interfered with the adaptation to embouchure of three individuals who had an open-bite relationship of the anterior teeth. One played the brass instruments and two the wood-winds. The brass instrumentalist exhibited an open-bite relationship of the front teeth by three-quarters to one inch. For three years he had attempted unsuccessfully to master the cornet. The teeth, due to the open-bite, were not in position to support the lips during instrumental activity and prevented satisfactory adjustment to the cornet embouchure. A similar result was experienced during efforts to adjust to the larger mouthpiece of a trombone. It is of further interest that this individual gave up the use of the brass instruments without knowing the reason for his failure to make the necessary adjustment for function. From this history it appears that individuals with extreme open-bites should not attempt to play the small brass instruments, nor can they expect to be highly successful in adjusting to the medium-sized brass mouthpiece.

The two clarinetists (they had been troubled also by anterior irregularity and are included in that group in Table II) complained of interference from open-bite relationships occurring opposite the corners of the mouth. At these points, the maxillary canines, and to some extent, the lateral incisors, were in infralabial relationship and there was an open-bite of one-quarter to one-half inch. As these individuals shifted their teeth apart and slightly forward during adjustment, the open-bite relationship at the canines increased. There was considerable difficulty in controlling the flow of the air stream into the aperture of the instrumental mouthpiece since the air tended to pass out through the open-bite areas. As a result, there was an unusual amount of pressure against the cheek tissues opposite the open-bite areas, and after only a short period of musical activity the air began to escape out of the corner of the mouth. As the musculature in these regions began to tire, the condition became almost uncontrollable. While this type of fatigue may be expected after long periods of in-

strumental activity, the individuals discussed here presented problems far more serious than are ordinarily encountered. Under certain conditions, then, partial open-bite relationships interfere with the adjustment to embouchure.

The difficulties encountered in dealing with extreme open-bites are well understood by the profession. For this reason, it seems best to advise against the use of brass instruments by prospective students who exhibit this condition. On the other hand, the lesser degrees of open-bite associated with crowding, protrusion, rotation, tipping, and other dental irregularities are often correctable. In many cases, it will be of advantage to the musician to have this condition corrected.

In conclusion, it is evident that there are many dentofacial irregularities which interfere with wind instrument musicianship. When confronted with these circumstances, the role of the orthodontist varies. In some cases, it will be adequate to advise the selection of instruments best suited to the occlusal variations of the individual. In others, orthodontic services will be needed to provide satisfactory functional relationships for the adaptation to embouchure.

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320 W. Ottowa Street.

Editorial

The New York Meeting of the American Association of Orthodontists

UNDER the direction of President Lowrie Porter of New York, one of the outstanding meetings of the American Association of Orthodontists for all time was concluded in New York on May 6.

The New York meeting was the forty-fifth annual session of the society and was held at the Commodore Hotel. The society and the meetings have grown to such a size that it is now necessary to provide headquarters of sufficient size to provide five or six hundred rooms for orthodontists from Maine to California and from Canada to the Gulf.

The reservations for the various events on the program were efficiently handled in advance by mail so that upon arrival at the registration desk an envelope containing the reservations applied for by the member was handed to him all ready and in perfect order to be used without further ado.

As a result of the many requests to attend this meeting, it was found necessary to limit the attendance to members of the Association, associate members, students of the postgraduate and graduate schools, and those from foreign countries who could qualify as members of official societies in their native lands.

A comprehensive program was arranged for the ladies under the direction of an efficient ladies' program committee. The ladies' entertainment provided a guided sightseeing boat trip, get-acquainted tea, colored movies, Radio Music Hall, television broadcasts, radio broadcasts, luncheons, shopping tours, and theaters.

The international luncheon under the direction of Brigadier General Leigh C. Fairbank, retired, was a great success. The guests at this luncheon were the following:

Dr. O. Aldecoa, Uruguay.
Dr. Hanish Anderson, Scotland.
Dr. Prakash, India.
Dr. Henriquez, India.
Dr. L. Russell Marsh, England.
Dr. Friedlander, New Zealand.
Dr. Diaz Bazan, Cuba
Dr. Pablo Vallhonrat, Cuba } Havana, representing the Cuban Orthodontic Society.
Dr. Kling, Sweden.
Dr. Daugaar-Jensen, Denmark.
Dr. Samuel Fastlicht, Mexico.

Among the speakers were:

Dr. Lowrie J. Porter.
Dr. Sergio Giquel.
Dr. Marsh.

By official communication, Dr. Andrew Jackson of Philadelphia represented the Argentina Orthodontic Society. Several representatives were present from the Cuban Orthodontic Society, our neighbor to the south. Toasts were drunk to the President of the United States, the King of England, and the rulers of all foreign countries that were represented. The luncheon was very impressive and reflected that tremendous effort had been made to greet our foreign guests.

Another high spot was the reception honoring President and Mrs. Lowrie J. Porter Wednesday evening, May 4. The reception was given by the Northeastern Society of Orthodontists to which all members and their guests of the American Association of Orthodontists were invited. At 7:30 P.M. the gala banquet and entertainment were held. Without a doubt this was the largest banquet in attendance ever held by the Association in its entire history dating from the beginning in St. Louis, Missouri, in 1901. President Lowrie J. Porter acted as master of ceremonies and kept the affair in a fast tempo from beginning to end.

Monday—Recreation Day

The forty-fifth annual meeting opened up officially Monday, May 2, 1949, with a guided sightseeing boat trip around Manhattan Island. This trip was thrilling particularly to members coming from points west of the Hudson River. It afforded a marvelous opportunity to see the Statue of Liberty and a close-up of the "Gateway of the World" with all its pinnacles of stone and steel.

The points of interest were pointed out and described by lectures. Some of the sights were the Brooklyn Bridge, the Navy Yard, Bellevue Hospital, the Empire State Building, United Nations site, Rockefeller Center, New York Hospital—Cornell Medical Center, and the famed homes of wealth on Sutton Place. Other sights were the Hudson in all its magnificence, the towering Palisades of New Jersey, great apartment dwellings, the homes on Riverside Drive, the cloisters at Fort Tryon Park, and the George Washington Bridge, second largest span in the world. Some of the great ocean liners of the world and the ships that carried our troops and war cargoes were of great interest.

Busses left the Forty-second Street docks immediately after the sightseeing boat returned, and the busses transported the men of the party thirty-five miles into Westchester County to the picturesque Campfire Club of America. The outing of the Campfire Club under the direction of Donald Waugh and an energetic committee proved to be one of the great classics in entertainment ever put on by the American Association of Orthodontists. This club has enjoyed the membership of such celebrities in the past as Theodore Roosevelt, Daniel Beard, and Horace Greeley, and that made the background of the club interesting indeed.

Here follows some of the events of the afternoon:

The exhibition of skeet shooting by experts: Club President Warren Pond; Philip Smith; Ed Lang; and William Mallin. Following this was the

"know how" of pistol handling and trick shooting by men who have no superiors in this art. The skill demonstrated was nothing short of amazing.

This event was followed by Tom Florich, Hugh Nesbitt, Ted Lang and Philip Smith in a demonstration of big game shooting of all kinds.

One of the events of the day that aroused wide interest in a competitive way was the flapjack contest conducted by members of the club.

The contestants all started with the same equipment and ingredients for a flapjack. The rules for this contest were that the batter must be made and a golden brown, edible, nondoughy pancake must be made and pass the judges' inspection within eight minutes. Those who competed in this contest were Dr. Douglas Parker, the well-known oral surgeon of New York, Fulton Abercombie, Philip Smith, and Dr. Ted Lang. The contest was won by Fulton Abercombie in five minutes and thirty seconds. Dr. Joseph D. Eby was the judge of the event and he played no favorites.

Another exhibition and demonstration was that of bloodhounds on the trail. This demonstration was conducted by Mr. Cy Horton and his well-trained hounds of troop K of the New York State Police.

Dinner was served in the clubhouse to several hundred people. This repast was followed by the last but not the least entertaining feature of the day, a remarkable moving picture.

Dr. Harry Wright, the explorer and orthodontist of Philadelphia, projected his spectacular colored moving pictures taken on his recent "Rancador Xingu Expedition in Brazil." The pictures revealed the daily lives of people never before visited by white men insofar as history has recorded.

Sometime previous to the meeting these pictures were shown before the explorers' club of New York and attracted considerable attention so the sports committee lost no time in asking Dr. Wright to show them to the orthodontists of America.

There were 3,500 feet of color motion pictures made by Dr. Wright, while the expedition cut a swath through the Matto-Grosso, the last uncharted and unexplored part of the world.

The picture included the forward base on Xingu River and the discovery of the Stone Age Camaiuras Indians. The film dealt with the life and customs of these unknown people, including a five-day dance of the "Tange-tanga," in which two medicine men blowing ten-foot double-barreled flutes danced around the clearing for five days and four nights without stopping to sleep or eat. On the third day they were joined by their wives, who continued the maddening pace for the final two days. Although they were rarely seen drinking water and the heat reached 110 degrees, they did not perspire. In the three-day long wrestling match, the Indians did not seem to perspire. Examination of the teeth of 167 individuals revealed no malocclusion and very little tooth decay. A return to the same village a year later after they had been introduced to prepared and canned food and sugar found forty Indians to be missing from the original group and a great deal of carious teeth noted.

Tuesday—Scientific Program

The scientific program started at 9 A.M. Tuesday, May 3. After the invocation by Walter McFall, address of welcome by Walter H. Wright, response by President-Elect Max E. Ernst, and president's address by Lowrie J. Porter, the following essayists made up the program:

Color movie. Surgical Correction of Developmental Deformities of the Mandible. (Narrated by the author.) Reed O. Dingman, Ann Arbor, Michigan, Department of Oral Surgery, University of Michigan, School of Dentistry.

Paper. Linear Arch Dimension and Tooth Size—An Evaluation of the Available Bone Structure for Accommodation of the Teeth. C. W. Carey, Palo Alto, California.

Synopsis: A method of making the calculations of relative bone and tooth structure as applied to the diagnostic procedure of determining in advance the possibilities of future treatment (with or without extraction) and to assist in making the same decision in cases ready for treatment in the secondary dentition. This method is based on the work of Dr. Hays Nance and is predicated upon a survey of treated and untreated cases observed over a period of years.

Paper. Criteria for Extraction in Orthodontic Therapy Related to Dentofacial Development. J. A. Salzmann, New York City.

Synopsis: The trajectories of the jaws determine the final position of the individual teeth and the spatial relationship of the dental arches to the basal arches. Procumbency of the incisor teeth and the appearance of the facial profile are not alone sufficient for the establishment of criteria for extraction of dental units as an adjunctive procedure in orthodontic therapy. Additional diagnostic criteria are presented for determining indications and contraindications to extraction in relation to the developmental status of the individual patient.

Color movie. A Technique for Impression Taking and Model Pouring. Howard M. Lang, Los Angeles, California; Merton E. Hill, Jr., Laguna Beach, California; John B. Wilson, Los Angeles, California; narrated by Sidney E. Riesner, New York City.

Paper. Changing Dynamics of the Growing Face. Spencer R. Atkinson, Pasadena, California.

Synopsis: Using human osteological material of well over a thousand specimens obtained from North and South America, Europe, Asia, New Zealand, and Australia, the following is recorded: Gross growth of the maxilla and mandible; development of the mandibular fossa; growth of the accessory sinuses; development and eruption of teeth; arch form in relation to cephalic index; changing landmarks during growth; changing ratio of cancellous to cortical bone during growth; changing position of teeth to landmarks during growth; facts revealed in the study of the changing dynamics of the growing face are utilized in practical application to orthodontic diagnosis and treatment.

Exhibits supplementing Dr. Atkinson's paper:

Edwin Erickson, Washington, D. C.
J. A. Salzmann, New York City.
Samuel Fastlicht, Mexico City, Mexico.
Francis W. Nash, Scranton, Pennsylvania.
Fred G. Bowden, Denver, Colorado.
Robert L. Whitney, Pasadena, California.

Paper. The Use of the Twin-Wire Mechanism in the Treatment of Class II, Division 2, Malocclusions. Joseph E. Johnson, Louisville, Kentucky.

Synopsis: The number of cases of this type found in a group of 500 cases; also a step-by-step presentation of methods used in the treatment of these cases and the results shown several years after treatment has been completed.

Color movie. The Complete Rehabilitation of Cleft Palate Persons. The Lancaster Cleft Palate Clinic, Herbert K. Cooper, Director, Lancaster, Pa.

Paper. The Clinical Importance of Facial Types. Wendell L. Wylie, San Francisco, California.

Synopsis: Variety characterizes the human face; there are no two alike, and while we may categorize them for convenience, each face is in reality a "class" unto itself. Variation must be recognized by the orthodontist, since he is able on one hand to produce profoundly beneficial changes in faces and on the other hand his esthetic goals are sometimes unattainable because of inherent limitations of the facial patterns. Clinicians are recognizing distinct differences in response to therapy among individuals once lumped into a single group. Research workers systematically measuring and studying facial patterns are also showing previously unrecognized differences, and as these lines of study fuse, findings of clinical significance may rightfully be expected.

Presentation of the Albert H. Ketcham Award, The American Board of Orthodontics.

Past President's Luncheon (Club Suite, third floor).

Luncheon and annual meeting of the Northeastern Society of Orthodontists (East Ballroom). All members of the American Association of Orthodontists and guests are cordially invited to attend. Procure tickets at the registration desk.

Paper. Prophylactic Orthodontics.* Faustin N. Weber, Memphis, Tennessee.

Synopsis: The incidence of oral and dentofacial anomalies among the school age children of this country is high enough to make it apparent that a nationwide program of correction, though needed, is for the present impossible.

In recognition of this fact, a more widespread application of preventive orthodontic procedures is recommended.

The examination and treatment procedures to be followed in the practice of prophylactic orthodontics are given in some detail.

A Twenty-Five Year Report. Ernest N. Bach, Toledo, Ohio.

Synopsis: Data obtained from case records seeking the same information from all patients, during the last twenty-five years: diet, tooth pathology before placing appliances and after removal, care of teeth by patient, correlation of nutrition, and caries.

Movie. Cine-Fluoroscopic Study of Movements of the Temporomandibular Joint. Sidney E. Riesner, New York City; Robert Carlin, Johns-Hopkins University; Lester Eisner, New York City; narrated by Sidney E. Riesner.

Synopsis: A motion picture taken directly from a fluoroscopic screen showing the opening and closing movements of the jaw.

*These papers were submitted as theses to the American Board of Orthodontics in partial fulfillment of the requirements for certification and are read with the permission of the Board.

Paper. The Primary Dentition and Dentofacial Anomalies.* Dallas R. McCauley, Beverly Hills, California.

Synopsis: Early in the life of the specialty of orthodontics, the true nature of dentofacial dysplasia was recognized as a problem of aberrant growth. The bright hope of the profession was the accomplishment of optimum growth of the facial complex by means of early treatment. However, efforts to produce this optimum growth in the primary and transitional dentition by the applications of mechanical stimulation did not achieve the desired success. Many orthodontists limiting their vision to the mechanical approach have abandoned the ideal of prevention, the more difficult problem, in favor of later corrective treatment frequently requiring surgical removal of teeth. They incorrectly interpret the very excellent research findings on dentofacial growth of recent years. This grave error will retard the progress of orthodontics unless it is promptly corrected. The true goal of the science of orthodontics is prevention.

The orthodontist must realize that his first obligation is to the primary dentition. He has no alternative but to attack this problem of growth disturbance as it should be done, that is, by the practice of true dentofacial orthopedics.

Wednesday—Program to Be Conducted by Research Committee

I. Contributions from Orthodontic Department, University of Illinois:

Allen C. Brader, D.D.S., M.S. The Application of the Principles of Cephalometric Laminagraphy to Studies of the Frontal Planes of the Human Head.

Robert C. Drehlich, D.D.S., M.S. A Cephalometric Study of Untreated Class II, Division I Malocclusion.

Robert Litowitz, D.D.S., M.S. A Study of the Movements of Certain Teeth During and Following Orthodontic Treatment.

Robert B. Hedges, D.D.S., M.S. Analysis of the Changes in Molar Relationships in Class II, Division I Malocclusion.

Alton W. Moore, D.D.S., M.S. Head Growth of the Macaque Monkey as Revealed by Vital Staining, Embedding, and Undecalcified Sectioning.

Theodore M. Tirk, D.D.S., M.S. A Study of the Growth Curves of the Human Head by Planimetric Method.

Aaron Schaeffer, D.D.S., M.S. Behavior of the Axes of Human Incisor Teeth During Growth.

Guy A. Wood, D.D.S., M.S. Changes in Width Dimensions Between Certain Teeth and Facial Points During Human Growth.

II. Contributions from Orthodontic Department, Northwestern University:

Harold Schwartz, D.D.S. On the Use of the Norm Concept in the Implementation of Roentgenographic Cephalometry.

The Reliability of Various Diagnostic Methods Evaluated by Comparing the Original Analysis With the Result Achieved.

T. M. Graber, D.D.S. The Diagnostic Significance of the Vertical Dimension of the Face in Operated and Nonoperated Cleft Palate Deformity.

Vernon R. Boman, D.D.S. A Roentgenographic Study of the Position of the Mandible in Normal Occlusion of the Teeth.

Dayton G. Blume, D.D.S. A Roentgenographic Study of the Position of the Mandible in Malocclusion of the Teeth (Class II, Division 1, Angle).

*See footnote, previous page.

Joseph Jarabak, D.D.S. Resection of the Facial Nerve and Its Effect on Facial Growth (Rat). (Public Health Research Grant No. 1042.)

Removal of Mandibular Growth Center (Condyle) and Its Effect on Cranial and Facial Growth (Rat). (Public Health Research Grant No. 1042.)

James C. Toothaker, D.D.S. A Study of the Angle of Axial Inclination Between Teeth and Their Bony Bases.

Sam Weinstein, D.D.S. A Roentgenographic Cephalometric Study of the Relationship of the Denture Base Width to the Cranial Base.

John F. Maclean, D.D.S. A Roentgenographic Cephalometric Study of the Relationship of the Denture Base Width to the Cranial Base in Class II Malocclusion.

H. M. Stackler, D.D.S. An Evaluation of Error in Cephalometric Roentgenography Introduced by Variation in Positioning of the Head.

III. Contributions from Orthodontic Department, Tufts College:

Maurice R. Zingeser, B.A., D.D.S. Patterns of Craniodental Orientation.

J. Edward Gilda, B.S., D.D.S., and Richard S. Manley, Ph.D. Physiology of Mastication in Children With Malocclusions.

Ferdinand S. Hoffmeister, M.D., D.M.D., and Joseph P. Lazansky, M.D., D.D.S., D.M.D. Tissue Changes as Related to Occlusal Stress and Muscular Forces.

George Y. Richman, D.D.S. A Photomicrographic Study of Changes in Grain Structures After Certain Orthodontic Manipulations.

IV. Contributions from Orthodontic Department, University of Iowa:

Ernest Hixson. Structural Differences in Individuals With Functional Nasal and Nonnasal Voice Quality.

J. Franklin Dailey. The Correlation of Dentofacial Deformity and the Incidence of Certain Thumb and Finger Sucking Habits.

Hugo Browne Otopalik. A Method of Taking Oriented Mandibular Occlusal Roentgenograms.

Francis Robert Rampton. The Effect of Artificially Induced Muscle Function Patterns on the Growth of the Face in the White Rat.

Robert E. Moyers. An Electromyographic Analysis of the Normal Temporomandibular Articulation. The Role of Certain Muscles in the Genesis of Total Mandibular Retroversion: An Electromyographic Analysis.

V. Contributions from Orthodontic Department, Columbia University:

Joseph Luban, B.S., D.D.S., and Diana H. Grieg, B.A., M.A. Relationship Between Malocclusion and Speech Disturbances.

Walter H. Fordham, Jr., D.D.S. Relative Growth Study of Jaw Development.

Irwin D. Mandel, B.S., D.D.S. The Effect of Orthodontic Appliances on Caries Activity (by title).

Thursday—Registered Educational Clinics

First presentation.

Second presentation.

I. Applied Cephalometrics in Clinical Orthodontics. Department of Graduate Orthodontics, Tufts College Dental School, Boston, Massachusetts.

Herbert I. Margolis
Jacob H. Belofsky
Norman M. Cetlin
Michael Collito
Pierre J. Garneau
Alan Jackson
Henry Kaplan
Irving Kraut
Thaddeus Morrison, Jr.
Lieutenant Colonel Wallace J. Morlock
George Richman
Evelyn Witol

Synopsis: The Margolis cephalometric equipment, the method of constructing cephalic x-rays, also the criteria obtained from these records as applied to diagnosis and treatment. Various types of facial-dental deformities in different stages of treatment and the changes produced as evidenced by cephalometric records were shown.

II. Guiding Alveolar Growth and Eruption of the Teeth to Reduce Treatment Time and Produce a More Balanced Denture and Face. S. J. Kloehn, Appleton, Wisconsin.

Synopsis: When to start treatment is still one of the most controversial subjects in orthodontics. Treatment of the deciduous and mixed dentition has passed through various stages of popularity. The most recent school of thought has been to postpone treatment until all of the permanent teeth have erupted. This procedure often increases rather than decreases time of treatment and in some cases has permitted so much disturbance in alveolar growth and eruption that good treatment is impossible. Alveolar growth and eruption of the teeth can be guided at an early age resulting in better facial balance and a more stable denture. Simple appliances using light forces in conjunction with occipital anchorage applied over a short period of time will prevent severe malocclusions and a long period of treatment. The headcap is a most important adjunct in this treatment. Its philosophy and use were demonstrated.

III. Treatment of Cases With the Sliding Sectional Arch. C. W. Carey, Palo Alto, California.

Synopsis: An analysis of the mechanics involved in this mechanism and its application to specific cases; the construction and manner of use in both extraction and nonextraction; an exhibit of each classification and type.

IV. Guide Plane With the Labiolingual Technique:

E. C. Lunsford
H. K. Terry
Frank P. Bowyer
Boyd W. Tarpley
William H. Oliver

Synopsis: Special emphasis was on the occlusal guide plane and its effect on the temporomandibular articulation. Indications and contraindications for the guide plane were discussed. A number of cases showing the guide plane and results obtained from same were displayed.

A brief history of the guide plane was given by Oren A. Oliver.

V. The Tweed Technique. Philosophy and principles outlined by:

Wendell L. Wylie, Robert H. W. Strang, and Herbert I. Margolis.

Synopsis: Demonstration of models and of technical steps used in the attainment of optimum function, speed of treatment, stability, and longevity of dentition and esthetics by members of study groups.

VI. The Philosophy and Use of the Twin Wire Mechanism. The New York "Johnson Study Club":

Henry U. Barber, Jr. (dec'd)	Clare K. Madden
Walter R. Bedell	Lowrie J. Porter
C. Sterling Conover	Wilbur J. Prezzano
John J. Dolce	Franklin A. Squires
Joseph D. Eby	Donald B. Waugh
Ashley E. Howes	Leuman M. Waugh

Explanatory: Introductory remarks by Leuman M. Waugh (Coordinator), followed by lantern slide presentations on diagnosis and treatment planning; appliance principles and procedures; uses with soldered and removable lingual arches; coil spring forces; uses and adjustments of the twin-wire mechanism throughout treatment of various types of practical cases.

General Clinics

Simple Appliances as an Aid in Correcting Some Conditions. Spencer R. Atkinson, Pasadena, California.

Orthodontic Model Former. Samuel Ackerman, Cincinnati, Ohio.

Confusin' but Amusin'—A Sliding Hook—Coil Springs—Intraoral Ligatures—Construction and Uses. Ernest N. Bach, Toledo, Ohio.

Fabrication and Use of Acrylic Maxillary Expansion Device. Harry V. Banks, Denver, Colorado.

Differential Diagnosis of Maxillary Prognathism. Robert M. Bailey, III, Boston, Massachusetts.

Laboratory and Construction Aids. William A. Buhner, Daytona Beach, Florida.

Some Modifications of Present Techniques Showing Completed Cases and Cases Under Treatment. D. P. Comegys, Shreveport, Louisiana.

Orthodontics for Adults. Robert E. Coleman, Detroit, Michigan.

How to Make a Vinyl Headgear in Ten Minutes. Milton R. Culbert, Toronto, Ontario.

Extraction and Nonextraction in Identical Twins. Edward A. Cheney, Lansing, Michigan.

The Use of the Soundscriber in Recording Interviews. Herbert G. Frankel, Cincinnati, Ohio.

Mandibular Prognathism Treated by Means of Headcap-Chincap Assembly. Joseph K. Gold, Holyoke, Massachusetts.

Edgewise Arch-Treated Cases Finished With Kesling Positioners. F. A. Grimmett, Youngstown, Ohio.

The Sved Retainer. Emily T. Hicks, Pampa, Texas.

An Appraisal of Some Orthodontic Procedures. J. Wilson Harthorne, Portland, Maine.

The Stabilizing Plate as an Adjunct to Anchorage. L. B. Higley, R. E. Moyers, and the graduate students of the College of Dentistry, The State University of Iowa.

The Time, the Place, and the Appliance. Andrew F. Jackson, and John M. Jackson, Philadelphia, Pennsylvania.

Simplified Clinical Photography in Color. Herbert D. Jaynes, Atlanta, Georgia.

Instrument for Measuring Frankfort-Mandibular Plane Angle. Douglas J. Jamieson, Detroit, Michigan.

Fabrication of Your Own Molar Loop Bands in Stainless Steel. E. E. Johns, Kingston, Ontario, Canada.

Simplified Technique for Soldering Intermaxillary Hooks or Stops on Small Chrome Alloy Arches Without Reducing Temper of the Arch. Ernest T. Klein, Denver, Colorado.

The Universal Appliance With Its Modifications. Herman S. Livingstone, Boston, Massachusetts.

Orthodontic Aspects of Speech Correction in Gross Dentofacial Malformations. Jacob C. Lifton, New York, New York.

The Principles of Functional Treatment. L. Russell Marsh, London, England.

A Comparison of the Returns Received for Equal Amounts of Gold Scrap. H. I. Miller, Flint, Michigan.

Twin Arch Adjuncts. Cecil G. Muller, Omaha, Nebraska.

The Use of the Salzmann Maxillator for Direct Dentofacial Measurements of the Patient. David Mossberg, New York City, New York.

Complicated and Varied Cases of Malocclusion Treated With the Labial Arch Technique Showing Follow-up Records. M. Albert Munblatt, New York, New York.

Improved "Universal" Appliance. Francis Calmes, Kansas City, Missouri.

Twin-Arch Appliances. Harold E. Sippel, Buffalo, New York.

Serial Study of Occlusion; Birth to Twelve Years. J. H. Sillman, New York, New York.

Edgewise Appliance Therapy as Used in an Extraction Case. Bernard H. Schanbam, Jersey City, New Jersey.

Streamlining Office Photography. Robert E. Wade, Columbus, Ohio.

A Method of Aligning Profile Photographs. Clifford L. Whitman, Hackensack, New Jersey.

Occipital Anchorage as an Adjunct to Twin Arch Mechanism. Howard Yost, Grand Island, Nebraska.

Reports

REPORT OF THE EDITORIAL AND PUBLICATION BOARD OF THE AMERICAN ASSOCIATION OF ORTHODONTISTS

At the Board of Directors' meeting of the American Association of Orthodontists in Columbus, Ohio, April 26, 1948, the Editorial and Publication Board presented its annual report. With this report they submitted for the consideration of the Board of Directors a new contract to be affected between the American Association of Orthodontists and The C. V. Mosby Company pertaining to the AMERICAN JOURNAL OF ORTHODONTICS.

This new contract which they proposed was largely a rewriting of the then currently existing one, and was intended to clarify a few phrases, adapt the contract to actual existing operating relations between the two parties, and provide certain obviously indicated changes which would bring the older contract up to date. It was proposed that this revamped contract should become retroactive as of January 1, 1948. The new contract clearly defined the constituents of the Editorial Board of the JOURNAL and their duties, also the method of selection and the duties of the Editor-in-Chief and the Sectional Editors.

The changes in the financial agreement between the contracting parties were the principal ones necessary to bring the contract up to date. It was proposed that the en bloc subscription be increased from $5.00 to $7.00 per member per year, the time to be retroactive as of January 1, 1948.

This new contract also proposed that the costs of illustrations to be paid by the publisher should not exceed $2,000 in any one annual volume, and that this sum should be used at the discretion of the Editorial Board for this purpose only. It also stipulated that The C. V. Mosby Company agreed to pay to the American Association of Orthodontists the sum of $1,800 per annum, payable at the rate of $150 per month as a contribution to the editorial expense.

These two amounts represent a total of $3,800 maximum which the American Association of Orthodontists could expect from The C. V. Mosby Company as their share of the expense in the cost of operations and illustrations. In spite of the care exercised by the Editor-in-Chief, the Sectional Editors, and the Editorial Department of The C. V. Mosby Company, the cost of illustrations (now treble former costs) exceeded the $2,000 allowance paid by The C. V. Mosby Company by the sum of $508.03. In addition to this there was an expense item submitted by the Editor-in-Chief of $109.41 for incidental expenses, including postage, telegrams, telephone calls, etc. These two items, amounting to $617.44, have been paid from the treasury of the American Association of Orthodontists.

The annual audit for the calendar year of 1948 on the JOURNAL shows an over-all deficit of $1,499.61 to The C. V. Mosby Company. In order to offset this loss the regular subscription price to outsiders for the JOURNAL is now $10 per year, and the JOURNAL hopes to be able to expand advertising facilities so that between these two sources of income it may be able to break even, if not assume a slight profit-making basis.

The publishers, with the same attitude of generosity which has characterized them for the last thirty-four years, feel that since this arrangement has existed only one year it would not be right or fair to start any negotiations or make any new suggestions at this time. This magnanimous attitude must be fully recognized and treated with every reasonable consideration.

Looking to the future, the Editorial and Publication Board realizes that we cannot expect the American Association of Orthodontists to assume this additional and unlimited expense each year. We would suggest, however, that this matter rest for the time being, and

that the Board of Directors of the American Association of Orthodontists approve the payment of the items mentioned totaling $617.44 for this year. But if additional expense occurs another year, we believe some method should be adopted whereby the Board of Directors will place a limit on the additional amount that should be assumed by the American Association of Orthodontists or arrange some method whereby the additional cost may be handled. It is the opinion of this Board that since many publications are presentations from the various constituent societies that the additional cost of illustrations should be divided between the constituent societies according to their relative numerical representation in the American Association of Orthodontists.

During the past two years the Northeastern Society of Orthodontists agreed to underwrite $500 toward the cost of illustrations in publications originating from that Section. If each Section would agree to contribute $1.00 from its treasury for each active member in that Section, we would have with our present total membership a sum of $903 each year for JOURNAL expenses. This would seem a fair distribution, for the smaller sections would then pay a smaller amount, whereas the larger sections would pay a larger amount in accordance with their representation in the American Association of Orthodontists.

It is also the opinion of this Board that the cost of illustrations, particularly in view of the present high prices, should be kept down to a minimum both by the authors and the Sectional Editors, and that this should be considered a general policy of JOURNAL management. It is further suggested that Sectional Editors should notify essayists to prepare their illustrations for publication first, and for more amplified presentation afterward, in the interest of keeping illustrations at an absolute minimum.

In Section *V* of the Bylaws there appears the description of the duties of the Editorial and Publication Board. Paragraph *3* reads as follows: "An editor and two associate editors shall be appointed by the Board of Directors from the members of the Editorial and Publication Board." This paragraph has been called to the attention of the Chairman of the Constitution and Administrative Bylaws Committee, also to the Secretary-Treasurer and the other two members of this committee for their consideration. It seems that no one understands this third paragraph, nor do they know from whence it came nor why since its existence it has never been in operation. It conflicts entirely with the efficient and smooth-running agreement as set forth in the contract between the Association and The C. V. Mosby Company, and would only provoke confusion in the present manner of handling operations.

It is therefore suggested by the Editorial and Publication Board that paragraph *3* be removed from Section *V* of the Bylaws with no substitution, and that the remainder of Section *V* be left intact as it now stands.

Respectfully submitted,

REUBEN L. BLAKE.
GEORGE H. HERBERT.
GEORGE R. MOORE.
JOS. D. EBY, Chairman.

In Memoriam

W. K. SLATER

1867-1949

W. K. Slater, one of the pioneers of modern orthodontics, died Jan. 24, 1949, in Knoxville, Tennessee. He had retired from active practice three years ago. Dr. Slater was born at St. Clair in Hawkins County in 1867. He attended the St. Clair Academy and later Vanderbilt University, where he graduated in dentistry in 1892. He practiced a short time in Union City, Nashville, and then in Knoxville before the turn of the century.

Until 1920 Dr. Slater was a general practitioner. He was a most efficient operator, meticulous in everything he did, and had no rivals in manipulating gold in its various techniques. He pioneered in ceramics.

After 1920 Dr. Slater limited his practice to orthodontics and was eminently successful here also. He was a creative individual who contributed many techniques and methods to his profession. He was an extreme perfectionist, one of his favorite quotations being, "Many trifles go to make up perfection, but perfection is no trifle."

Dr. Slater was a very religious man, an excellent citizen, and a most lovable dentist. For several years he was a deacon in the First Baptist Church. He was a member of the Knoxville Rotary Club, the American Dental Association and its affiliates, the American and Southern Associations of Orthodontists, and the American College of Dentists. He was a past president of the Tennessee Dental Association and active in all local affairs.

His widow, Mrs. W. K. Slater, Sherwood Drive (Westmoreland), Knoxville, survives.

WILLIAM A. PARKER.
FRANK P. BOWYER.
OREN A. OLIVER.

WILLIAM ETHELRED LUNDY

1873-1948

The son of Mary Thornton Bernard Lundy and Dr. William Lewis Lundy, Dr. William Ethelred Lundy was born April 12, 1873, near Nesbit, DeSoto County, Mississippi.

Following preliminary education, principally in his native state, Dr. Lundy entered the Dental Department, University of Tennessee, Nashville, October, 1894, graduating there with distinction March 27, 1897. He practiced in north Mississippi before locating in Adairville, Kentucky, in January, 1900. In 1906 he moved to Bowling Green, Kentucky, then to Memphis, Tennessee, in July, 1908. After an association in general dentistry, he entered the specialty of orthodontics in 1911, in which his excellence was phenomenal.

During 1910 Dr. Lundy became one of the organizers and a faculty member of the Dental College of the University of Memphis. He later had a prominent role in the merger of this institution with that of his Alma Mater and bringing it to Memphis as an essential integral of the now eminent medical center. As department head he taught orthodontics for approximately twenty years.

In addition to membership in the local, state, and American Dental Associations he was a member of the Southern Society of Orthodontists, American Society of Orthodontists, and a Fellow of the American College of Dentists. The Psi Chapter of Omicron Kappa Upsilon, honorary dental fraternity, conferred membership upon him as a pronouncement of merit. He also was commended for service as a Medical Advisor during World War I.

Early in life Dr. Lundy united with the Cumberland Presbyterian Church, becoming an Elder at the age of nineteen and serving as General Assembly Treasurer in 1907. Later he joined the Second Presbyterian Church, of Memphis, and liberally supported its program as a Deacon for five years and as a Ruling Elder for twenty-five years.

Though the victim of a paralytic stroke July 27, 1944, from which recovery was incomplete, he refused to retire until late 1947. Even then he continued to see exceptional cases. A similar attack May 6, 1948, proved fatal within a few hours. He leaves a record of sacred responsibilities well met and all obligations adequately discharged.

Dr. Lundy and Miss Mattie Roberts, of Adairville, Kentucky, were married June 10, 1904. She, one daughter, Mrs. Walker L. Wellford, Jr., of Memphis, and a sister, Mrs. E. L. Powell, of New Orleans, survive him.

JUSTIN D. TOWNER.

Members of the American Association of Orthodontists who have died since the 1948 meeting:

Henry U. Barber, Jr., New York, New York.
Milton H. Fisher, Tacoma, Washington.
Thomas O. Gorman, San Antonio, Texas.
Albert Johnson, Portland, Maine.
Leland R. Johnson, Chicago, Illinois.
William E. Lundy, Memphis, Tennessee.
Charles S. McCowen, Palo Alto, California.
Paul J. McKenna, Springfield, Massachusetts.
Ervin C. Read, Long Beach, California.
William K. Slater, Knoxville, Tennessee.
Armin E. Wulfman, Huntington, West Virginia.

Department of Orthodontic Abstracts and Reviews

Edited by

DR. J. A. SALZMANN, NEW YORK CITY

All communications concerning further information about abstracted material and the acceptance of articles or books for consideration in this department should be addressed to Dr. J. A. Salzmann, 654 Madison Avenue, New York City

Serial Extraction as a Corrective Procedure in Dental Orthopedic Therapy.

By Birger Kjellgren, *Acta Odontol. Scandinav.* **8**: 17-43, January, 1948.

Experience in the past half-century shows rather limited possibility of reaching and, especially, maintaining an ideal result. There is more or less risk of relapse after the final treatment of certain malocclusion types. Present experience especially shows a strong tendency of recurrence in cases of evident crowding and contraction. It is frequently necessary in these cases to be satisfied with a compromise treatment. The size of the jaws may make it necessary to reduce the dental units where the bones are too small to allow a perfect occlusion in order to obtain functioning and esthetic optimal results. Extractions are necessary for treatment of many malocclusions, especially contraction anomalies, in order that the best possible result may be obtained. Extractions should be made: (1) when as a direct effect the extraction provides possibility for the remaining teeth to shift so that the calculated results will be a better functioning and esthetically improved occlusion; (2) when it provides a condition for, or fundamentally facilitates, the treatment of the malocclusion by orthodontic appliances.

Both the patient and the operating dentist will at least to some degree hesitate in the extraction of a noncarious tooth, even in cases of evident crowding; therefore, it can often be postponed so long that the anomaly is fully developed and manifested in the permanent dentition. In many cases the occlusion can be improved by suitable extractions even at this time, but in other cases, perhaps the majority, the anomaly has become unnecessarily complicated, and, in addition to extraction, now requires treatment by appliances over a longer period of time. It therefore seems important and of real therapeutic value that at an early stage, preferably in the deciduous dentition, the dentist try to perceive the developmental prognosis and make clear if reduction of dental units by extraction will be necessary. Loss of deciduous teeth is generally designated in orthodontic literature, especially by the earlier writers, as solely harmful. This, of course, is true in cases of normally developing deciduous arches. The teeth adjacent to the resulting space may drift, constituting an obstruction to the permanent teeth which later should erupt.

When the tendency toward crowding, with constricted arches, is diagnosed early in the mixed denture, most often the choice lies between an attempt at: (1) full expansion, aiming at a normal occlusion; (2) compromise treatment by reduction of dental units (extraction) in connection with simplified appliance treatment; (3) possibly reaching an acceptable compromise result through extraction alone. The prognosis for the first alternative is, however, often uncertain; the treatment by appliances many times requires several years. It even may happen, especially in cases of poor health or nervousness, that the patient's psychic and physical tolerance to the treatment is overstrided. In these cases of appliance-treated contraction malocclusions, a later reduction in connection with the eruption of 8 ± 8 is generally required (Andresen). The length and

difficulties of this treatment for so prevalent an anomaly, even when using the modern simplified methods (lingual arches, Andresen or Schwarz-plates), make the general realization of this plan of treatment a Utopian scheme under present social conditions. The frequency of contraction anomalies in need of treatment is so great that even the second alternative would usually be a difficult therapeutic task. Therefore, the cases which are likely to be brought to an acceptable result according to the third alternative and, of course, even the second alternative are always numerous, both in socialized dentistry and in private practice.

In early diagnosed malocclusion cases where extraction seems evident in order to reach an optimal result, the idea of treatment according to the second and third alternatives is to plan the extractions in the mixed denture so as to facilitate the best possible development of the resulting reduced permanent denture.

The applied method then consists of one or more extractions of deciduous teeth in the mixed denture, with the purpose of forming a most favorable possible situation for the extractions in the permanent denture, where the intended final reduction of the dental units is carried out. This method has been named "serial extraction" by the author since it was first made public in 1929.

The eruption of the permanent central incisors, especially in the upper jaw, often causes the premature resorption and loss of the deciduous lateral incisors; the permanent lateral incisors cause the resorption and loss of the deciduous canines. As far as the deciduous canine is concerned, loss by such root resorption is incomparably more frequent than loss from caries, since this tooth, like its permanent successor, is relatively caries-resistant.

The premature loss of the deciduous canines with the eruption of the lateral incisors is, in these cases, a "result" of the constricted arch and the crowded position of the permanent teeth, "not," as is often pointed out in the literature, a "cause" of the same. In such cases in which the deciduous canines resorb with the eruption of the lateral incisors, the permanent incisors and, especially, the lateral incisors usually assume an even position in the dental arch, without much rotation or distortion because they make use of the space intended for the canines. This is contrary to cases of crowding in which the deciduous canines have not been resorbed by the eruption of the lateral incisors. In these latter cases, the incisors, after eruption, often assume a distorted and rotated position, forming a very disturbing malocclusion. In both cases, the crowded position is accentuated upon the eruption of the permanent canines.

In the cases where the deciduous canines are resorbed with the eruption of the lateral incisors and the incisors come into relatively good positions, the permanent canines often erupt in so high a labial position that a good self-regulation can take place after the extraction of the first premolars. Such cases are the typical good extraction, self-regulating cases. Especially if the crowded eruption of the permanent canines exists only in the upper jaw and the lower jaw has an almost normally shaped dental arch and is in distal occlusion, the extraction of the upper first premolar is very effective, and if the bite is not abnormally deep, is a suitable treatment for the occlusion in its entirety.

In cases where the deciduous canines are not resorbed by the lateral incisors' eruption, and where the incisors in this connection are often crowded and rotated, the permanent canines can, of course, often grow into place after extraction of the first premolars, but the crowded position of the incisors usually does not improve much by such an extraction, and these cases, in addition to the extraction of the first premolars, often require regulation of the incisors by appliances.

Premature loss of the deciduous canines due to resorption at the eruption of the lateral incisors results, therefore, in a malocclusion which is less complicated,

less disturbing, and more adaptable to treatment, often only in need of extraction. On the contrary, cases of constricted arches, where the deciduous canines have not been resorbed by the eruption of the lateral incisors, give an essentially more serious malocclusion picture, both cosmetically and functionally, as well as from a therapeutic viewpoint. Observation of these relationships motivates that in such cases as develop according to the latter type, attempt to attain an occlusion picture of the first type by extraction of the deciduous canines at the most favorable time, which, later, upon the eruption of the permanent canines, can be treated to advantage by extraction, usually of the first premolar.

In such cases where especially the lateral incisors are protruding (distorted) and the crowding is not too extreme, the method, serial extraction, may be used which consists in first extracting the deciduous canines at the age of 8 to 10 years and some year later extracting usually the first deciduous molar, and last, preferably close to the complete eruption of the first premolar and one-half eruption of the canine, extracting, as a rule, one premolar. In this way, the canine will be allowed to grow into the created space in the dental arch. According to predominant thought, it cannot be denied that extraction of the deciduous canines at the time of the eruption of the lateral incisors, about 8 years of age, involves some risk of decreasing the arch development; therefore, as a rule, it is not extracted until over half of the lateral incisor has erupted, usually 9 years, since with the eruption of the incisors, the anterior portion of the dental arch has nearly reached complete lateral development. If the lateral incisors have protruded labially or lingually, or are not too much rotated (under 30°) when erupting, this malposition will now often improve in the facilitated last phase of its eruption. If, however, the lateral incisors are rotated as much as 45° to 90°, especially mesiolabial rotation, chances for improvement are decidedly less. Even at an early stage, these positions of extreme rotation seem to be a manifested occlusion type, which shows strong relapse after treatment and lacks ability for self-improvement, even upon the abolishment of the crowding in the arch. A slightly rotated or protruding position of the erupting lateral incisors, on the contrary, often seems to become involved by the opposition their eruption encounters from the deciduous canines' roots and crowns. If this opposition (the deciduous canine) is removed, conditions for eruption are, therefore, often relieved, and the lateral incisors can grow into a normal position. Sometimes the lateral incisors are so rapidly and greatly affected that it is apparent that their malposition was a crowded position caused because during their eruption they slid along the roots of the deciduous canines and were forced into a malposition between these and the central incisors. Thus, even in developing inverted occlusions are found examples of erupting lateral incisors that rapidly grow into a normal labial position after the extraction of the deciduous canines that were pressing against them.

When the lateral incisors first start erupting in a constricted space, at 7 to 8 years of age, they can be aided to a more normal eruption by slicing off the mesial surface of the deciduous canines that presses against the lateral incisor. This is the first step in helping the occlusion; extraction of the deciduous canine about half a year later will be the next step.

Extraction of the first deciduous molars at 10 to 11 years helps to ease the eruption of the first premolars and thereby even the adjacent canines. In order that the first premolars can erupt as far distally as possible, the mesial contact point of the second deciduous molar may be ground off. The largest space possible is thereby provided for eruption of the canines without too early an extraction of the first premolars. If this extraction is made too early in the eruption stage of the canines, there is danger that the second deciduous molars or, still more, the second premolars and the molars may drift mesially to such an extent that there is not space enough left for the canines in spite of extraction.

If the first premolars are thus extracted a long time before the completed downward growth of the canines, a space maintainer should be provided to keep the space after extraction.

It can also happen that to provide supplementary space for the erupting canines it may be more advisable to eliminate the first molar, if it is carious, or the second molar, if it is in extreme malposition, instead of extracting the first premolar. In exceptional cases when the primarily displaced canines erupt directly over the lateral incisor, it may seem advisable to remove the lateral incisor; likewise, with complete abnormal position of the canines, these may be extracted. For these reasons and on general principles not to extract a permanent tooth before it is absolutely necessary and when an accurate estimate of the result of such an action can be made, the first premolar should not be extracted in the early stages of its eruption.

Knowledge of the canines' positions and the existence of the premolars is of great importance in serial extraction. If the canines lie in a normal, slightly mesially-inclined labial position, a self-improvement of the lateral incisors' positions is very likely, as well as a good result for the canines. If, as sometimes happens, the canines have extreme mesial inclination with the crowns labial to and in contact with the roots of the lateral incisors, self-regulation of the lateral incisors is thereby partially or completely hindered. In spite of this situation, the final eruption position of the canines is, however, often improved by serial extraction. Although the adjustment effect of serial extraction in these cases may be limited, there is, however, no direct contraindication, unless the permanent canines are impacted in such difficult positions that they are not very likely to be moved into position.

In cases of diastema between the central incisors and also crowded erupting lateral incisors, serial extraction should not be performed before the diastema is corrected, since the loss of the deciduous canines will increase the diastema. Extraction of the deciduous canines is unsuitable in cases of diastema between the lateral and central incisors. Serial extraction is less effective in a deep bite where the lower incisors bite onto the gingivaepalatal to the upper incisors.

The serial extraction method is very adaptable for crowded or bunched incisors of the maxillary arch, especially in Angle's Class II distoclusion, with a crowded protruding maxillary arch, where the bite is not too deep (not below the cingulum) and without crowding of the teeth in the lower arch. Here serial extraction need only be performed in the upper arch.

Cases of protruding and crowded upper arch, especially with an open-bite, are often much improved. If these patients are thumb-suckers, extractions of the deciduous canines often seem to help in breaking this habit.

In cases of bimaxillary contraction of neutroclusion type, the method can be employed in both jaws, but it is here desirable to perform the extractions in the lower jaw somewhat later than in the upper jaw, since the occlusion pressure in a normal overbite produces contraction upon the mandibular arch, opposite to the maxillary arch, and it is unnecessary to risk weakening the lower arch.

Early serial extraction in the lower jaw alone can often be of real therapeutic value in Class III malocclusion with a crowded tooth condition in the mandibular arch.

Cross-bite can to a certain extent be helped by serial extraction through removal of deciduous lower canines locked by inversion, and finally by extraction of relatively nonantagonizing premolars on the cross-bite side.

Serial extraction will help both in closing an open-bite and relieving crowded position of the incisors which may be existing in an open-bite case.

Premature loss of deciduous teeth, especially of the deciduous canine, is sometimes reported in the literature as the cause of retention of the corresponding permanent tooth. Experience from a great number of cases of serial extraction does not, however, support this idea.

Very premature loss of a deciduous tooth several years before the normal eruption time of its successor often seems to give it less probability of normal eruption, even though the loss of the tooth did not result in a loss of space. Such an early loss slows up and often hinders the eruption, probably because it is more difficult for the anlage of the permanent tooth to resorb and push through the now scarred and rather compact bone and mucous membrane barrier than to resorb the root of the deciduous tooth. This is more often true of premature loss of lower deciduous molars. Very early loss of upper deciduous incisors, especially the central incisors, often results in a "leathery" hardening of the gingiva, caused from biting on it, which hinders the eruption of the permanent incisor.

If the deciduous tooth is lost only about a year before the normal time of eruption of its permanent successor, according to clinical experience, the eruption is not retarded, but, on the contrary, the process is speeded up through the opening which is hereby provided, and the respective permanent tooth has an earlier eruption than would otherwise be the case. This is true of all deciduous teeth. Such an induced eruption is confirmed by the strong eruption promoting effect obtainable by the resection of the covering tissues formed after a very premature loss of a deciduous tooth, where otherwise the succeeding tooth would be retarded or hindered. This effect is most often noticed in the resection of tissues over a lower premolar which is retarded in erupting.

The early extraction of the deciduous canine three to four years before the normal shedding time, here related, and in many other cases, has not shown to be accompanied by the obvious corresponding retarded eruption that premature loss of deciduous molars would have. The reason seems to be that the permanent canine in these cases of constricted jaw usually does not erupt on the crest of the alveolar process where the deciduous canine stood, and where some scar tissue can have formed after the extraction. The eruption point for the canine in these cases, which is to some extent true even in normal cases, lies relatively high on the labial surface of the alveolar process where there, of course, can be no obstructing scar tissue caused by the extraction of the deciduous canine.

In opposition to the extraction of the deciduous canines in the constricted arches here designated, at 8 to 10 years of age, can even be stated that this should supposedly contribute to a greater contraction of the arches. Measurement of a number of cases, however, shows that no contraction of the transverse distance between the deciduous molars or first permanent molars can be observed. In the anterior portion of the arches, on the contrary, in favorable cases, there seems to be a measurable increase in width, even after extraction of the deciduous canines, and often after this extraction there is a rapid transverse increase in width between the lateral incisors. The space after the extracted deciduous canines is completely or partially filled by the erupting lateral incisors, which are now free to drift out of a crowded position, if the crowns of the permanent canines do not hinder the process. In this connection, the incisor portion of the dental arches can greatly increase in width, even up to 10 mm. Results can, however, be attained through serial extraction without appliance treatment. In other cases, serial extraction provides a simplification and a fundamentally facilitated condition for the supplementary appliance treatment which must follow.

SUMMARY

According to experience, malocclusions characterized by crowding teeth and contraction of the jaws usually cannot be treated with lasting results without reduction of the number of teeth. In some of these cases acceptable results can be obtained just by extractions even without the use of appliances. In order to direct the development of the occlusion in contraction cases along the most

favorable lines, it is suitable to plan for the advisable or necessary extractions at an early age. The extractions will concern at first certain deciduous and later some permanent teeth. This line of extraction treatment is called serial extraction by the author, who has practiced the method for about twenty years. A serial extraction is usually performed in the following way: if in a contraction case the incisors, particularly the lateral incisors, are erupting in crowded and distorted positions, extractions are made of the deciduous canines. This treatment will, in well-diagnosed cases, result in a very clear improvement of the incisor positions. Some years later, extraction of the first deciduous molar might be done to facilitate and speed the eruption of the permanent canines; an extraction of some permanent tooth, usually the first premolar, is made, which will facilitate the normal eruption of the canines. The serial extraction method is practiced in both jaws in cases of bimaxillary contraction, Class I. In Class II cases with contraction and protrusion of the upper jaw, it is employed in the maxillary arch. In cases of Class III characterized by crowding of the lower incisors, serial extraction is used with good results in the mandibular arch. The serial extraction method is more suitable in cases of deep overbite. According to experience it does not cause impaction or retardation of eruption of the canines. Serial extraction is many times a suitable preliminary treatment in cases which are planned to be finally treated by appliances, and it will often greatly facilitate this later treatment.

News and Notes

American Association of Orthodontists

The following is the list of officers and board of directors of the American Association of Orthodontists for the interval between the 1948 meeting in Columbus, Ohio, and the 1949 meeting in New York.

OFFICERS

President, Lowrie J. Porter, New York, New York.
President-Elect, Max E. Ernst, St. Paul, Minnesota.
Vice-President, William R. Humphrey, Denver, Colorado.
Secretary-Treasurer, George R. Moore, Ann Arbor, Michigan.

BOARD OF DIRECTORS

The Board of Directors consists of:

Officers of the Association.
Chairmen of elected committees.
Directors elected by constituent societies.

Officers

Lowrie J. Porter
William R. Humphrey
Max E. Ernst
George R. Moore

Chairmen of Elected Committees

John W. Ross
Samuel D. Gore
Joseph D. Eby
Leo M. Shanley
James W. Ford
Allan G. Brodie
S. Stuart Crouch
Philip E. Adams

Directors of Constituent Societies

Howard E. Strange, Director, Central Section.
Cecil G. Muller, Alternate, Central Section.
Wilson R. Flint, Director, Great Lakes Society.
C. Edward Martinek, Alternate, Great Lakes Society.
J. A. Salzmann, Director, Northeastern Society.
Richard A. Lowy, Alternate, Northeastern Society.
C. F. Stenson Dillon, Director, Pacific Coast Society.
William F. Walsh, Alternate, Pacific Coast Society.
George H. Siersma, Director, Rocky Mountain Society.
Ernest T. Klein, Alternate, Rocky Mountain Society.
A. C. Broussard, Director, Southern Society.
G. Fred Hale, Alternate, Southern Society.
Homer B. Robison, Director, Southwestern Society.
E. B. Arnold, Alternate, Southwestern Society.

Librarian

Richard A. Smith, Evanston, Illinois.

ELECTED COMMITTEES

Judicial Council

John W. Ross, 1949, *Chairman*, Philadelphia, Pennsylvania.
J. Camp Dean, 1950, Oakland, California.
M. Duke Edwards, 1951, Montgomery, Alabama.

Budget

Samuel D. Gore, 1949, *Chairman*, New Orleans, Louisiana.
W. A. Murray, 1950, Evanston, Illinois.
Glenn F. Young, 1949, New York, New York.

Editorial and Publication Board

Joseph D. Eby, 1951, *Chairman*, New York, New York.
R. L. Blake, 1949, San Francisco, California.
George H. Herbert, 1950, St. Louis, Missouri.

Education

Allan G. Brodie, 1951, *Chairman*, Chicago, Illinois.
Walter T. McFall, 1949, Asheville, North Carolina.
George M. Anderson, 1950, Baltimore, Maryland.

Laws and Infractions

S. Stuart Crouch, 1949, *Chairman*, Toronto, Ontario, Canada.
John R. McCoy, 1950, Beverly Hills, California.
W. B. Stevenson, 1951, Amarillo, Texas.
Clyde O. Wells, 1952, Spartanburg, South Carolina.
Ralph G. Bengston, 1953, Chicago, Illinois.

Research

Allan G. Brodie, 1950, *Chairman*, Chicago, Illinois.
B. Holly Broadbent, 1949, Cleveland, Ohio.
Wendell L. Wylie, 1951, San Francisco, California.

Constitution and Bylaws

Philip E. Adams, 1949, *Chairman*, Boston, Massachusetts.
Oren A. Oliver, 1950, Nashville, Tennessee.
Ernest N. Bach, 1951, Toledo, Ohio.

Relief

Leo M. Shanley, 1951, *Chairman*, St. Louis, Missouri.
Hays N. Nance, 1949, Pasadena, California.
William R. Humphrey, 1950, Denver, Colorado.

Public Relations

James W. Ford, 1950, *Chairman*, Chicago, Illinois.
Harold J. Noyes, 1949, Portland, Oregon.
Frederick R. Aldrich, 1951, Columbus, Ohio.

APPOINTED COMMITTEES

Nomenclature

Kyrle W. Preis, 1949, *Chairman*, Baltimore, Maryland.
Frank S. Cartwright, 1950, Detroit, Michigan.
Will G. Sheffer, 1951, San Jose, California.

Necrology

Leigh C. Fairbank, 1949, *Chairman*, Washington, D. C.
A. B. Thompson, 1950, Des Moines, Iowa.
James W. Ford, 1951, Chicago, Illinois.

Interrelations

E. C. Lunsford, 1951, *Chairman*, Miami, Florida.
G. Vernon Fisk, 1949, Toronto, Ontario, Canada.
John W. Ross, 1950, Philadelphia, Pennsylvania.

Nominating

Lowrie J. Porter, *Chairman*, New York, New York.
Howard E. Strange, Chicago, Illinois.
Wilson R. Flint, Pittsburgh, Pennsylvania.
J. A. Salzmann, New York, New York.
C. F. Stenson Dillon, Hollywood, California.
George H. Siersma, Denver, Colorado.
A. C. Broussard, New Orleans, Louisiana.
Homer B. Robison, Hutchinson, Kansas.
William E. Flesher (member-at-large), Oklahoma City, Oklahoma.

Military Affairs

E. C. Lunsford, *Chairman*, Miami, Florida.
Arlo M. Dunn, Omaha, Nebraska.
Marion A. Flesher, Oklahoma City, Oklahoma.
Ernest T. Klein, Denver, Colorado.
W. Robert MacConkey, Rochester, New York.
Paul V. Reid, Philadelphia, Pennsylvania.
L. S. Singleton, Los Angeles, California.

Banquet

Ashley E. Howes, *Chairman*
John J. Dolce
Augustus B. Holt
Eugene J. Kelly
Frank Nicolai
Wilbur J. Prezzano
Anna M. Urban

International Luncheon

Leigh C. Fairbank, *Chairman*
Spencer R. Atkinson
Andrew F. Jackson
E. C. Lunsford
John R. Ross
Glenn F. Young

Entertainment

Walter R. Bedell, *Chairman*
Stanley M. Dow
Leigh C. Fairbank
Harry E. Jerrold
Clare K. Madden
Donald B. Waugh

Ladies' Entertainment

Norman L. Hillyer, *Chairman*
Donald Hutchinson
Otto J. Sorenson

Boat Trip and Bus to Campfire Club

Oscar Jacobson, *Chairman*
Bertram E. Gerzog
Alexander L. Ungar

Sports (Campfire Club)

Donald B. Waugh, *Chairman*
James C. Allan
Joseph D. Eby
William A. Hillis
Leuman M. Waugh
Glenn F. Young

SESSIONS OF AMERICAN ASSOCIATION OF ORTHODONTISTS

Year	*Presidents*	*Secretaries*	*Places of Meeting*
1901	*Edward H. Angle	Milton T. Watson	St. Louis
1902	*Edward H. Angle	Milton T. Watson	Philadelphia
1903	*Milton T. Watson	Anna Hopkins	Buffalo
1904	Lloyd S. Lourie	Anna Hopkins	St. Louis (Int'l. Dental Cong.)
1905	Lloyd S. Lourie	Anna Hopkins	Chicago
1906	*R. Ottolengui	Frederick S. McKay	New York
1907	*Herbert A. Pullen	Frederick S. McKay	Detroit
1908	*Charles A. Hawley	Frederick S. McKay	Washington
1909	Frank M. Casto	F. C. Kemple	Cleveland
1910	*B. Frank Gray	F. C. Kemple	Denver
1911	Alfred P. Rogers	F. C. Kemple	Boston

1912	*Milton T. Watson	F. C. Kemple	Chicago
1913	B. E. Lischer	F. C. Kemple	Chicago
1914	*Guy B. Hume	W. E. Walker	Toronto
1915	*Frederick C. Kemple	W. E. Walker	San Francisco
1916	*Frederick C. Kemple	F. M. Casto	Pittsburgh (Int'l. Dental Cong.)
1917	M. N. Federspiel	F. M. Casto	Excelsior Springs
1918	D. Willard Flint	F. M. Casto	Chicago
1919	O. W. White	F. M. Casto	St. Louis
1920	John V. Mershon	F. M. Casto	Chicago
1921	*J. Lowe Young	Ralph Waldron	Atlantic City
1922	*Martin Dewey	Ralph Waldron	Chicago
1923	*Burt Abell	W. H. Ellis	Chicago
1924	Ralph Waldron	W. H. Ellis	Kansas City
1925	Clinton C. Howard	W. H. Ellis	Atlanta
1926	*William C. Fisher	W. H. Ellis	New York (First Int'l. Ortho. Cong.)
1927	Joseph D. Eby	Charles R. Baker	Chicago
1928	Walter H. Ellis	Charles R. Baker	Buffalo
1929	*Albert H. Ketcham	Charles R. Baker	Estes Park
1930	Oren A. Oliver	Charles R. Baker	Nashville
1931	*Harry E. Kelsey	Claude R. Wood	St. Louis
1932	Charles R. Baker	Claude R. Wood	Toronto
1933	W. E. Flesher	Claude R. Wood	Oklahoma City
1935	L. M. Waugh	Claude R. Wood	New York
1936	H. C. Pollock	Claude R. Wood	St. Louis
1937	P. G. Spencer	Claude R. Wood	Chicago
1938	James D. McCoy	Claude R. Wood	Los Angeles
1939	*Harry A. Allshouse, Jr.	Claude R. Wood	Kansas City
1940	William A. Murray	Claude R. Wood	Chicago
1941	*Henry U. Barber, Jr.	Max E. Ernst	New York
1942	Claude R. Wood	Max E. Ernst	New Orleans (Inter-American Cong.)
1944	James A. Burrill	Max E. Ernst	Chicago
1946	Archie B. Brusse	Max E. Ernst	Colorado Springs
1948	Earl G. Jones	Max E. Ernst	Columbus, Ohio

American Board of Orthodontics

The annual session of the American Board of Orthodontics was held Thursday morning, April 28, 1949, at the Commodore Hotel, New York, New York.

DIRECTORS

Bernard G. deVries, President
Joseph D. Eby, Vice-President
James A. Burrill, Treasurer
Stephen C. Hopkins, Secretary
James D. McCoy
Reuben E. Olson
Raymond L. Webster

THE ALBERT H. KETCHAM MEMORIAL

The Albert H. Ketcham Memorial Award was established by the American Board of Orthodontics in collaboration with the American Association of Orthodontists in 1936. The names of those who have received the award follow:

1937, Dr. John Valentine Mershon.
1938, Dr. Alfred Paul Rogers.
1939, Dr. Milo Hellman.
1940, Dr. George Wellington Grieve.
1941, Dr. Frederick Bogue Noyes.
1942, Dr. Harry E. Kelsey.
1944, Dr. B. Holly Broadbent.
1946, Dr. Raymond Clair Willett.
1948, Dr. Clinton C. Howard.
1949, Dr. William K. Gregory.

CERTIFICATES GRANTED IN 1949

Robert E. Allen,
301 St. James Building,
Jacksonville, Florida.

William R. Alstadt,
610 Boyle Building,
Little Rock, Arkansas.

Frank P. Bowyer,
608 Medical Arts Building,
Knoxville, Tennessee.

Mounger Duke Edwards,
812 First National Bank Building,
Montgomery 4, Alabama.

Paul Geoffrion,
Medical Arts Building,
Montreal, Canada.

Joseph Krammgold,
316 High Street,
Holyoke, Massachusetts.

John Mason Griffin,
6381 Hollywood Boulevard,
Hollywood, California.

Geneva E. Groth,
1301 Medical Arts Building,
Philadelphia, Pennsylvania.

L. Bodine Higley,
University of Iowa,
College of Dentistry,
Iowa City, Iowa.

Ralph Warren Hodges,
402 Farmington Avenue,
Hartford, Connecticut.

Russell E. Huber,
660 Fidelity Medical Building,
Dayton, Ohio.

Wilbur D. Johnston,
215 Whitney Avenue,
New Haven, Connecticut.

Neil Jones Leonard,
1108 Exchange Building,
Memphis, Tennessee.

Z. Bernard Lloyd,
2007 R Street, N. W.,
Washington 9, D. C.

Clare Kenneth Madden,
22 Lafayette Place,
Greenwich, Connecticut.

Hunter, Irving Miller,
615 Mott Foundation Building,
Flint 3, Michigan.

Harland L. New,
3 S. Prospect Avenue,
Park Ridge, Illinois.

Donald Daggett Osborn,
133 Waterman Street,
Providence, Rhode Island.

Olin Watson Owen,
1003 Liberty Life Building,
Charlotte, North Carolina.

Paul Vernon Ponitz,
605 Post Building,
Battle Creek, Michigan.

Paul Victor Reid,
Medical Arts Building,
Philadelphia 2, Pennsylvania.

William Robert Root,
333 Linwood Avenue,
Buffalo 9, New York.

Harlow L. Shehan,
601 Jackson City Bank,
Jackson, Michigan.

Eldridge P. Smith,
146 Hempstead Avenue,
Rockville Centre, New York.

Henry Spiller,
333 Linwood Avenue,
Buffalo, New York.

D. Robert Swinehart,
717 Medical Arts Building,
Baltimore 1, Maryland.

John Robert Thompson,
1753 West 95th Street,
Chicago, Illinois.

Louis Frank Tinthoff,
819 Jefferson Building,
Peoria 2, Illinois.

Arthur Cranston Totten,
121 East 60th Street,
New York, New York.

H. DeForest Whitmarsh,
49 Front Street,
Binghamton, New York.

Rocky Mountain Society of Orthodontists

The Rocky Mountain Society of Orthodontists met April 6, 1949, in the offices of Dr. Humphrey and Dr. Siersma, Denver, Colorado, at a regularly scheduled meeting, to study the relation of sodium fluoride to dental caries control. Dr. Harry V. Banks, President, presided. Dr. Frederick S. McKay, Colorado Springs, Colorado, gave a lecture on the subject, "Dental Caries Control With Fluorination of City Water Supplies," illustrated with slides and charts. Dr. Walter J. Pelton, Dental Consultant, District #8, United States Health Service, Denver, Colorado, gave a lecture, with slides and charts, on the subject, "Dental Caries Control With Topical Application of Sodium Fluoride." Dr. Robert A. Downs, Director of Public Health Dentistry, State of Colorado, acted as moderator at the meeting and conducted a lively discussion at the completion of lectures. Everyone present praised the clinicians for their excellent presentations of this subject.

Guests present were F. S. McKay, D.D.S., Colorado Springs, Colorado, Walter J. Pelton, D.D.S., Denver, Colorado, Oliver Choy, D.D.S., Honolulu, T. H., and E. E. Edwards, D.D.S., Sheridan, Wyoming.

Members present were Harry V Banks, Curtis E. Burson, Curtis L. Benight, Thomas Gardner, R. L. Gray, O. H. Devitt, A. P. Horton, William R. Humphrey, E. T. Klein, E. S. Linderholm, George H. Siersma, and honorary member R. A. Downs.

ERNEST T. KLEIN, SECRETARY-TREASURER.

Central Section of the American Association of Orthodontists

The regular annual meeting of the Central Section of the American Association of Orthodontists will be held Sept. 25, 26, and 27, 1949, at the Sheraton Hotel, St. Louis, Missouri.

EARL E. SHEPARD, Secretary,
Lister Building, St. Louis, Missouri.

New Dean of University of Southern California School of Dentistry

Dr. John C. Brauer, Director of Postgraduate Dental Education in the University of Washington School of Dentistry, Seattle, was appointed Dean of the University of Southern California School of Dentistry today by President Fred D. Fagg, Jr.

Dr. Brauer, who will assume his new duties June 15, will succeed the late Dean Julio Endelman, who died Nov. 10, 1948, after being on the Southern California faculty thirty-four years.

The new dean will take charge of the 52-year-old Southern California School of Dentistry at a time when the university is planning an extensive dental development program that will include new building facilities.

Nationally known as a specialist in children's dentistry, Dr. Brauer is president of the American Academy of Pedodontics and chairman of the American Board of Pedodontics. He is also executive officer of the Department of Children's Dentistry at the University of Washington, where he has been on the faculty two years.

The Dental Alumni Foundation

The faculty of the School of Dentistry of the University of Michigan announces the establishment of a fund for the training of young men and women in the various fields of dental research and teaching. This fund, which will be known as the Dental Alumni Foundation, is sponsored by a committee of Michigan alumni, of which Dr. Orton Goodsell, of Saginaw, is general chairman.

Denver Summer Seminar

The program for the Twelfth Denver Summer Seminar to be held at the Park Lane Hotel, Denver, Colorado, July 31 through Aug. 5, 1949, follows:

Growth of the Facial Bones and Development of Occlusion—Some Late and Efficient Developments in Simplified Orthodontic Appliances. Spencer R. Atkinson, D.D.S., M.S.D., Professor of Dental Research, School of Dentistry, University of Southern California. Dr. Atkinson is a man of national and international reputation, whose accomplishments speak for themselves.

Tissue Changes Produced by Trauma—Bone Changes Produced by Inflammatory and Systemic Conditions. Balint Orban, M.D., D.D.S., 1940-1946, Professor, Oral Pathology, School of Dentistry, Loyola University, Chicago; Director of Colorado Dental Foundation; Member, Attending Staff, Fitzsimons General Hospital. Dr. Orban is increasingly in demand and is an outstanding lecturer in his field.

Clinical Approach to Orthodontic Therapy—Lantern Slides Illustrating the Full Gamut of Treatment From Four Years of Age Through the Different Growth Periods Up to and Including Adults. Joseph D. Eby, D.D.S. Dr. Eby needs no introduction in the field of orthodontics. He is always willing, always good, and always outstanding.

Twin-arch Technique of Treatment. A symposium by some of our members led by Cecil G. Muller, D.D.S., of Omaha, Nebraska.

E. S. Linderholm, Secretary.

Notes of Interest

Sidney Brandt, D.D.S., announces the removal of his offices to 10 Park Place, Park Square Building, Morristown, New Jersey, telephone Morristown 4-2171, practice limited to orthodontics.

Dr. Sydney Cross wishes to announce the removal of his office from Suite 510 to Suite 403, Pellissier Building, 3780 Wilshire Boulevard at Western Avenue, Los Angeles 5, California, practice limited to orthodontics.

Dr. Sanford N. Kingsly wishes to announce the limitation of his practice exclusively to orthodontics at the Williamsburgh Savings Bank Building, One Hanson Place, Brooklyn 17, New York.

James A. McBrien, D.D.S., wishes to announce his association with Ross F. Bleiker, D.D.S., Suite 934, Missouri Theatre Building, 634 North Grand, St. Louis 3, Missouri, telephone JEfferson 2428, practice limited to exodontia and oral surgery.

Dr. Robert P. Posner announces the opening of his offices at Midway Theatre Building, 108-22 Queens Boulevard, Forest Hills, Long Island, telephone BOulevard 3-6643, for the exclusive practice of orthodontics, by appointment.

Everett Shapiro, D.M.D., announces the opening of his office at 1093 Beacon Street, Brookline, Massachusetts, telephone ASpinwall 7-6480, practice limited to orthodontics.

Dr. Walter S. Watson announces the removal of his practice to 80 Hanson Place, Brooklyn 17, New York, telephone NEvins 8-2166, practice limited to orthodontics.

OFFICERS OF ORTHODONTIC SOCIETIES

The AMERICAN JOURNAL OF ORTHODONTICS is the official publication of the American Association of Orthodontists and the following component societies. The editorial board of the AMERICAN JOURNAL OF ORTHODONTICS is composed of a representative of each one of the component societies of the American Association of Orthodontists.

American Association of Orthodontists

President, Max E. Ernst - - - - - - 1250 Lowry Medical Arts Bldg., St. Paul, Minn.
President-Elect, Joseph E. Johnson - - - - - - - - - - Starks Bldg., Louisville, Ky.
Vice-President, Sergio Giquel - - - - - - - - - - - - 521 Neptune, Havana, Cuba
Secretary-Treasurer, George R. Moore - - - - - 919 Oakland Ave., Ann Arbor, Mich.

Central Section of the American Association of Orthodontists

President, Joseph H. Williams - - - - - - - - 3720 Washington Blvd., St. Louis, Mo.
Secretary-Treasurer, Earl E. Shepard - - - - - - - - - 4500 Olive St., St. Louis, Mo.

Great Lakes Society of Orthodontists

President, Wilson R. Flint - - - - - - - - - - - - Jenkins Arcade, Pittsburgh, Pa.
Secretary-Treasurer, Scott T. Holmes, 509 Hackley Union National Bank Bldg., Muskegon, Mich.

Northeastern Society of Orthodontists

President, Norman L. Hillyer - - - - - - - - - Professional Bldg., Hempstead, N. Y.
Secretary-Treasurer, Oscar Jacobson - - - - - - - - 35 W. 81st St., New York, N. Y.

Pacific Coast Society of Orthodontists

President, C. F. S. Dillon - - - - - - - - - - - - - Taft Bldg., Hollywood, Calif.
Secretary-Treasurer, Frederick T. West - - - - - 870 Market St., San Francisco, Calif.

Rocky Mountain Society of Orthodontists

President, Harry V. Banks - - - - - - - - - - - - 1550 Lincoln St., Denver, Colo.
Vice-President, Elmer S. Linderholm - - - - - - - - 1558 Humboldt St., Denver, Colo.
Secretary-Treasurer, Ernest T. Klein - - - - - - - 632 Republic Bldg., Denver, Colo.

Southern Society of Orthodontists

President, Samuel D. Gore - - - - - - - - Maison Blanche Bldg., New Orleans, La.
Secretary-Treasurer, Frank P. Bowyer - - - - - - Medical Arts Bldg., Knoxville, Tenn.

Southwestern Society of Orthodontists

President, J. S. Cunningham - - - - - - - - - - - - 3718 Travis St, Houston, Texas
Secretary-Treasurer, Marion A. Flesher - - - - Medical Arts Bldg., Oklahoma City, Okla.

American Board of Orthodontics

President, James D. McCoy - - - - - - 405 North Bedford Drive, Beverly Hills, Calif.
Vice-President, Joseph D. Eby - - - - - - - - - - - 121 E. 60th St., New York, N. Y.
Secretary, Stephen C. Hopkins - - - - - - - 1726 Eye St., N. W., Washington, D. C.
Treasurer, Reuben E. Olson - - - - - - - - - - - - 712 Bitting Bldg., Wichita, Kan.
Raymond L. Webster - - - - - - - - - 133 Waterman St., Providence, R. I.
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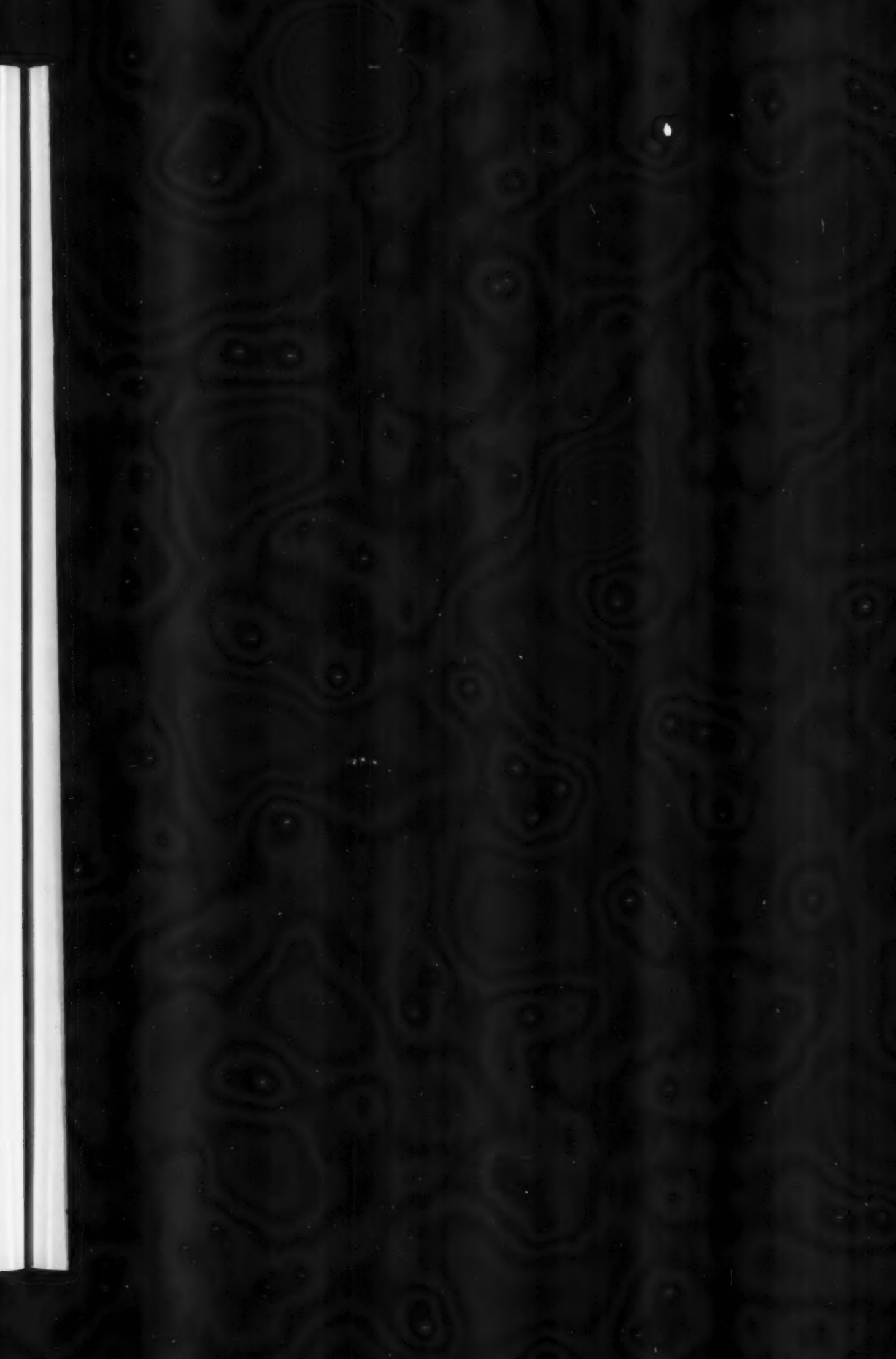

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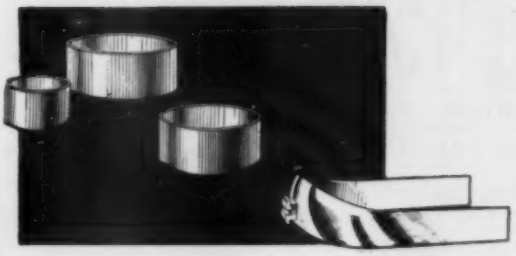

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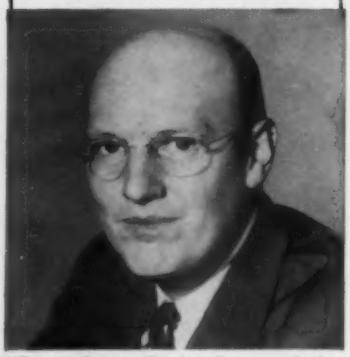

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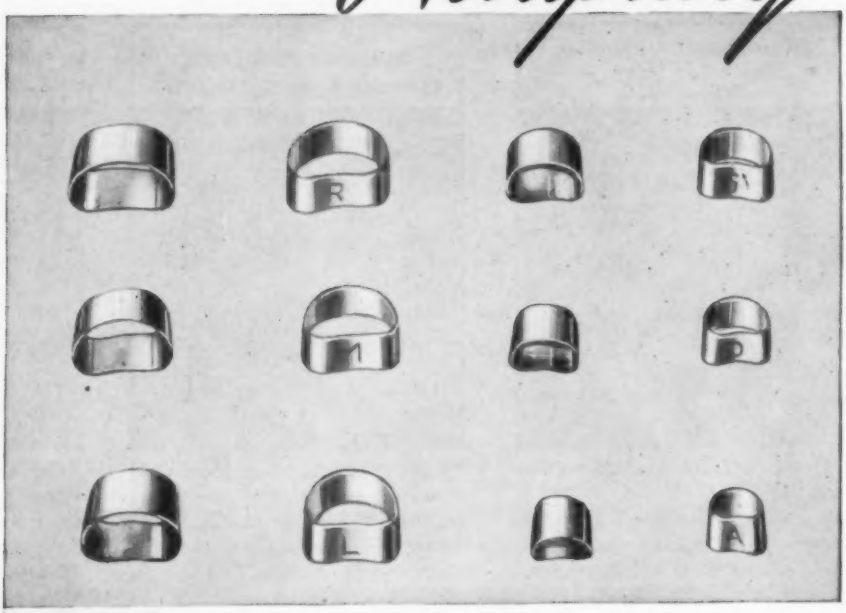

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